SERVICE MANUAL

17" HIGH - RESOLUTION
COLOR DISPLAY MONITOR
MODEL FFY7705

MITSUBISHI ELECTRIC

X-RADIATION WARNING

The surface of picture tube may generate X-Radiation.
Precaution during servicing, and if possible use of a lead apron or metal for shielding is recommended. To avoid possible exprosuer to X-Radiation and electrical shock hazard, the high voltage compartment and the picture tube shield must be kept in place whenever the chassis is in operation.
When replacing picture tube use only designated replacement part since it is a critical component with regard to X-Radiation as noted above.

CRITICAL COMPONENT REPLACEMENT WARNING

- The components marked " ⚠ " are critical components for X-ray radiation. When replacing these parts, use exactly the same one indicated in parts list.
- Please do not remove the seal of sealed potentiometer.
- The components stated below are no field serviceable parts. If broken, please contact with qualified personnel of Mitsubishi Electric Corp. or the distributor which indicated on name plate.
  VR506 (HV-ADJ) VR504(HV-LIMIT) T502 (FBT)

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MAR. 20,1993

VSP-D093 (A)

SPECIFICATION
OF
17" AUTO-TRACKING COLOR DISPLAY MONITOR
(TENTATIVE)

MODEL: FFY7705SETK
FFY7705SKTK

NO.	TYPE			MITSUBISHI STANDARD	REMARKS
1	CRT	Size		17"FS	
		Mask Dot Pitch (mm)		0.28 mm	
		Phosphor Type		P22	
		Face-plate		Anti-static coating	AR coating with Anti-static for FFY7705SKTK
		Light Transmission		Tinted (57%)	
2	SCANNING	Horizontal Freq. (KHz)		30~78KHz	
		Vertical Freq. (Hz)		50~130Hz	
3	SIGNAL INPUT	Video R. G. B.		Analog	
		Sync.		Separated -Posi. & Nega. or Composite HV or Sync. on Green	TTL for separated sync.
		Termination (Impedance) (Ω)	Video	75Ω to GND	
			Sync.	1KΩ to GND	
4	VIDEO AMP	Dot clock rate		120MHz±3dB (Typ.)	
5	SCREEN CHARACTE-RISTICS	Display Resolution		1280×1024 (Typ.)	
		Display size (mm)	Horizontal	300mm (Typ.)	
			Vertical	225mm (Typ.)	
		Misconvergence	Center	0.35mm (Max.)	
			Other	0.45mm (Max)	
		Brightness		100cd / m² (Typ.)	
6	CONTROLS	User Controls	Front	Power SW, Degauss SW, Contrast / Brightness V-HEIGHT / V-POSI / H-PHASE / H-WIDTH / Preset recall	10 timings presettable Micro-processor control
7	CONNECTER	Power Input		Pig-tail power cord	
		Signal Input		D-SUB 15P shrinked	
8	POWER SUPPLY	Operating range		AC120V	
9	CABINET	with Tilt / Swivel stand		Mitsubishi standard	
10	REGURATION	Safety		UL / CSA	
		EMI		(FCC-B) Now A.	
		X-Ray		DHHS	

DEC. 7,1992

VSP-D094

SPECIFICATION
OF
17" AUTO-TRACKING COLOR DISPLAY MONITOR
(TENTATIVE)

MODEL: FFY7705SKTKL

NO.	TYPE			MITSUBISHI STANDARD	REMARKS
1	CRT	Size		17"FS	
		Mask Dot Pitch (mm)		0.28 mm	
		Phosphor Type		P22	
		Face-plate		AR Coating & Anti-Static	
		Light Transmission		Tinted (57%)	
2	SCANNING	Horizontal Freq. (KHz)		30~78KHz	
		Vertical Freq. (Hz)		50~130Hz	
3	SIGNAL INPUT	Video R. G. B.		Analog	
		Sync.		Separated -Posi. & Nega. or Composite HV or Sync. on Green	TTL for separated sync.
		Termination (Impedance) (Ω)	Video	75Ω to GND	
			Sync.	1KΩ to GND	
4	VIDEO AMP	Dot clock rate		100MHz±3dB	
5	SCREEN CHARACTE-RISTICS	Display Resolution		1280×1024 (Typ.)	
		Display size (mm)	Horizontal	300mm (Typ.)	
			Vertical	225mm (Typ.)	
		Misconvergence	Center	0.35mm (Max.)	
			Other	0.45mm (Max.)	
		Brightness		100cd/m² (Typ.)	
6	CONTROLS	User Controls	Front	Power SW, Degauss SW, Contrast/Brightness V-HEIGHT/V-POSI/ H-PHASE/H-WIDTH/ Preset recall	10 timings presettab Micro-processor control
7	CONNECTER	Power Input		3P IEC Plug	
		Signal Input		D-SUB 15P shrinked	
8	POWER SUPPLY	Operating range		AC100~120V/ AC220~240V	Power Management by Sync. Polarity
9	CABINET	with Tilt/Swivel stand		Mitsubishi standard	
10	REGURATION	Safety		TÜV	
		EMI		VDE-B	
		X-Ray		PTB	
		VLF/ELF		MPR-II (TÜV-Ergo)	

1. SPECIFICATION

1.1 FEATURES

(1) HIGH RESOLUTION IMAGE

1280 x 1024 pixel resolution image in non-interlace mode comes out. Flicker free image is enabled by non-interlace operation.

(2) AUTO TRACKING FUNCTION

Input signals which have 30 KHz~78 KHz as horizontal scanning freq., and 50 Hz~130 Hz as vertical scanning freq. can be displayed correctly in the screen of this monitor by the auto tracking function without any adjustment.
Display image size and position of 5 different signal sources are memorized by user and that of 8 different signal sources are preset at factory.

(3) EASY RE-ADJUSTMENT

Adjustment points of display image size and position are easily accessed through the front lid of the standard plastic cabinet, and push buttons.

(4) WIDE - BAND - VIDEO AMPLIFIER

Wide-band-analog video amplifier can display the fine-grained picture with unlimitted colour.

NOTE:

In case of horizontal freq. around 62 - 64 KHz and vertical refresh rate of 74 - 76 Hz, should be applied as resolution 1024 x 768.

1.2 RATING / SPECIFICATION

(1) AC Power Voltage: 90-132 and 180-264VAC
(2) AC Power Frequency: 50/60 Hz
(3) Power Consumption: 120 W (nominal)
(4) Input Signal
(a) Video Signal: Analog RGB 0.7 Vp-p (typ)
(Positive bright)
(b) Sync Signal:
Composite sync on Green video 0.3Vp-p (typ)
Composite sync 1.5 Vp-p - 5.0 Vp-p (Negative)
Separate sync 1.5 Vp-p - 5.0Vp-p
(HD/ VD) (Negative / Positive)
(5) Interface
(a) Video Signal: Shrink D-SUB 15p
Connector
(b) Input Impedance: 75ohm for video signal
1Kohm for Sync. Signal
(6) Scanning Frequency:
Horizontal 30KHz - 78KHz
Vertical 50Hz - 130 Hz
(7) Warm Up Time: More than 30 minutes
(8) Effective Display Area: 300(W) x 225(H) mm
(9) Brightness: 100 nits (typ) with B22 phosphor
(10) Operater Controls:
NOMAL MODE
Power SW (Front panel)
Degauss SW (Front panel)
Contrast control (Front panel)
Bright control (Front panel)
Horizontal width control
Horizontal position control
Vertical height control
Vertical position control
PCC-AMP
Color-select
ENHANCED MODE
R, G, B Video gain controls
PCC-PHASE
(11) Service Controls (Front lid):
DBF
H-OSC
+B
etc.

(12) Video Amplifier:
50Hz - 110 MHz ±6dB
Tr / Tf 6 nsec (typ)
(13) Retrace Time: Horizontal 3.0 μsec
(Recommended) Vertical 600 μsec
(14) Linearity: 7 % (max)
(15) Raster Distortion: 2.0 % (max)
(16) Raster Size Regulation: 0.5 % (max)
(17) Misconvergence:
* Center 0.35mm (max)
(within 225 mm diameter circle)
* Other Area 0.45mm (max)
(18) High Voltage: 25.0 KV (typ)
(19) Temperature: 0~40 ℃ (with standard cabinet)
(20) Outline Size: 410(W) x 406.5(H) x 440(D) mm
(Incl. T/S)
(21) Weight: Approx. 21.5 kg (Incl. T/S)

2. CIRCUIT DESCRIPTION

2.1 GENERAL

This display monitor is composed of eight blocks as shown in BLOCK DIAGRM (Schematics).

(a) Power supply block(PCB-MAIN)
(b) Control block (PCB-CONTROL)
(c) Deflection block (PCB-MAIN)
(d) Video block (PCB-VIDEO)
(e) Vertical deflection block (PCB-VERT)

Every blocks will be explained in detail in following chapters. In this chapter, the auto-tracking function will be explained generally.
Input sync signals whose horizontal scanning frequency of 30KHz-78KHz and vertical scanning frequency of 50Hz-130Hz can be automatically locked on without adjusting H-HOLD/V-HOLD. This automatic lock on function is performed by the circuits in PCB-CONTROL.

To maintain optimum operation of circuits over wide frequency range, some elements in circuits are switched according to horizontal frequency of input sync signal. The circuit in PCB-CONTROL counts the frequency of input sync signals, and generates control signals.
PCB-CONTROL also maintains the other control signals to adjust picture sizes, positions, etc. electronically.

2.2 POWER SUPPLY BLOCK

2.2.1 GENERAL

(1) Dual input voltage 100～200 VAC and 220～240VAC (automatically) are supported .
(2) The output lines of this power supply are shown in Table 2-1 with their main loads.
(3) The power supply works as switced mode operation with RCC (R inging Choke Converter) configuration. Output voltages are regulated by 3 of primary circuit feed back signal through photo coupler (IC904). The switching frequency is corresponding to load currents.
The 60V-140V line is regulated by the DC chopper method from168V line whose switching frequency is corresponding to H-Sync input.

OUTPUT LINE	MAIN LOAD
6.3 V	CRT Heater
24 V	H / V Deflection IC, H - Drive
26 V	V - Deflection
5 V	CPU
12 V	Video Circuit
70 V	Video Circuit
200 V	Video Circuit, HV Circuit
- 12 V	DAC Pre-Amp. for S - PCC Circuit for R, G, B - Gain

Table 2-1

2.2.2 RECTIFY AND FILTER CIRCUIT

(1) The AC input voltage is rectified by the diode bridge in IC901.
The rectified voltage is filtered by charging C905.
(2) The resistor R906 is to supress the inrush current after power on. After the capacitor C906 is charged, the thyristor THY(in IC901) is on to by-pass R906.

2.2.3 DEGAUSS CIRCUIT(in PCB-CONTROL)

(1) This monitor is provided the auto and manual degauss function.
(2) The auto-degauss circuit is operated as follows after started up the micro computer. The degauss signal from micro computer turns on Q710, and then RY901 operates degauss circuit during approx. 5 sec so that the degauss current could flow to the degauss coil via RP901.
(3) The manual degauss circuit works during approx. 5 sec which is controlled by the degauss signal from micro computer (when pushing the degauss switch (SW109)).
(4) A varistor RV901 works to keep approximately the same degauss current in both case of 220-240VAC and 100-120 VAC line input.

2.2.4 PRIMARY CIRCUIT

(1) Main DC power supply of this monitor consists of RCC (Ringing Choke Converter).
When the power switch is turned on, triggering current is fed through R910 and Q908 to flow the collector current of Tr1 in IC902 which is a main switching transistor.
An error amp. IC951 detects an output voltage and makes a feed back to primary circuit via photo- coupler IC904.

(2) When Tr1 switch off, the energy which is stored in primary winding T901 transfers to secondary circuit. When all stored energy is discharged, the voltage of each coil is reversed and Tr1 (main switch transistor in IC902) switches on.
The base current of Tr1 is supplied by the discharge of C915.

(3) Photo-coupler IC904 controls input current to F/B of IC902 and changes the turn on thresh time by which on time of Tr1 is controlled.

(4) R916 and R920 are the resistors to detect over-current.

(5) This monitor has a power management function.
Depends on sync signal input, The monitor has 4 modes to save power consumption.

MODE	H-SYNC	V-SYNC	STATUS
Normal	ON	ON	-
Stand-by	OFF	ON	No video
Suspend	ON	OFF	heater on
Completed-off	OFF	OFF	heater off

Each mode's power consumption and LED indication of contrast and bright is as follows.

MODE	Power	LED indication
Normal	120W	-
Stand-by	100W	0.5sec blink
Suspend	30W	2.0sec blink
Complete-off	8W	2.0sec blink

2.2.5 SECONDARY CIRCUIT (IN PCB-MAIN)

(1) In this paragraph chopper circuit which is applied for auto-scanning circuit will be explained.

(2) Chopper circuit mainly consists of L510, IC707 and Q534.
The output voltage +B is regulated by Q534 on PCB-MAIN in terms of PWM control to change the horizontal display size. The output from 9 pin of IC707 is pulse wave whose on-duty is followed by feed-back signal to pin 2 of IC707 from the collector of Q709 in order to change +B.
The increase or decrease command of H-size comming from MPU goes to DAC IC702 on PCB-CONTROL and then into pin 2 of IC707 as a H-size signal through IC703 and IC704.

2.3 CONTROL BLOCK

2.3.1 GENERAL

The CONTROL BLOCK is on PCB-CONTROL.
Fig.2-1 shows the block diagram of PCB-CONTROL.

(1) PCB-CONTROL has one CPU in IC101, IC101 is a gate array which also includes AD/DT latch, frequency counter, SIO,LED driver,sync polarity detector,etc. one nonvolatile memory IC106, and other control ICs.
The input signal for PCB-CONTROL are fed from tact switches on PCB-CONTROL, horizontal and vertical sync signals.

(2) Based on above signals, IC101 reads out data like as screen size, screen position etc., which are stored in IC106, and stores into RAM in IC101.
IC101 provides the horizontal deflection control signals like as AFC constant and Cs switching which are stored in ROM on IC101.

(3) Output signals from IC101 are fed into each controled circuit through D/A converter IC702 and IC101 also has D/A converter.
Inside D/A converter controls brightness,contrast, H,V-size, H,V-phase and RGB-gain.
IC702 controls PCC-AMP,PCC-phase, H-free run frequency, DBF and +B adjustment.

(4) IC102 drives 2 LEDs and Cs and H-Linearity.

(5) SW101～110 on PCB-CONTROL are corresponding to each buttons on front panel as the figure of page 8.

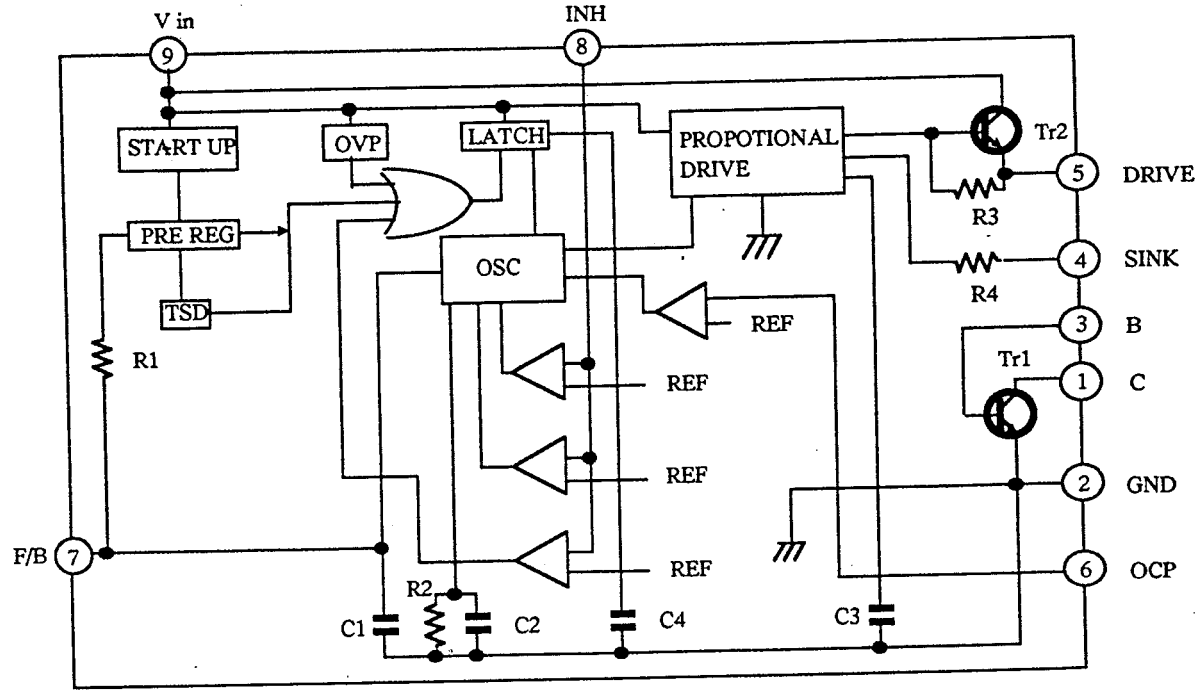
(6) IC701 is a AFC controler. Output pulse is fed into the gate of Q502 on PCB-MAIN.

(7) IC707 is a +B controler. The gate input of the Q534 (PCB-MAIN) is generated by IC707.

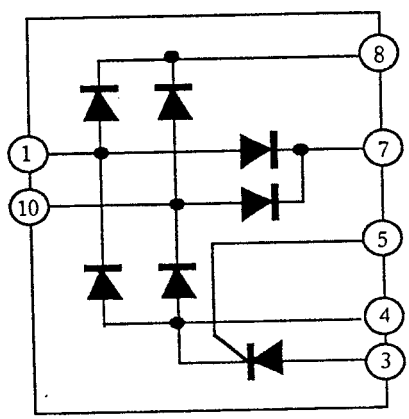
(8) IC708 drives contrast and RGB gain. Contrast control signal is fed into IC200 on PCB-CRT.
RGB gain control signals are also fed into IC200.

(9) IC107 and Q101 work as sync separation circuit.
Sync signal with green video will be sliced out to H-V composite signal.

IC902 STR-S6707



IC901 MJ2400



IC951 SE140N

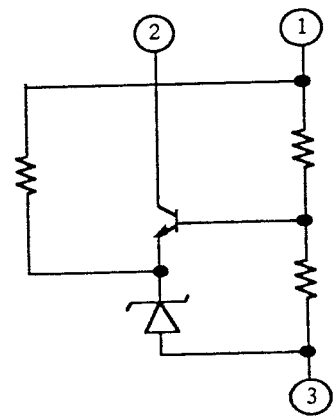
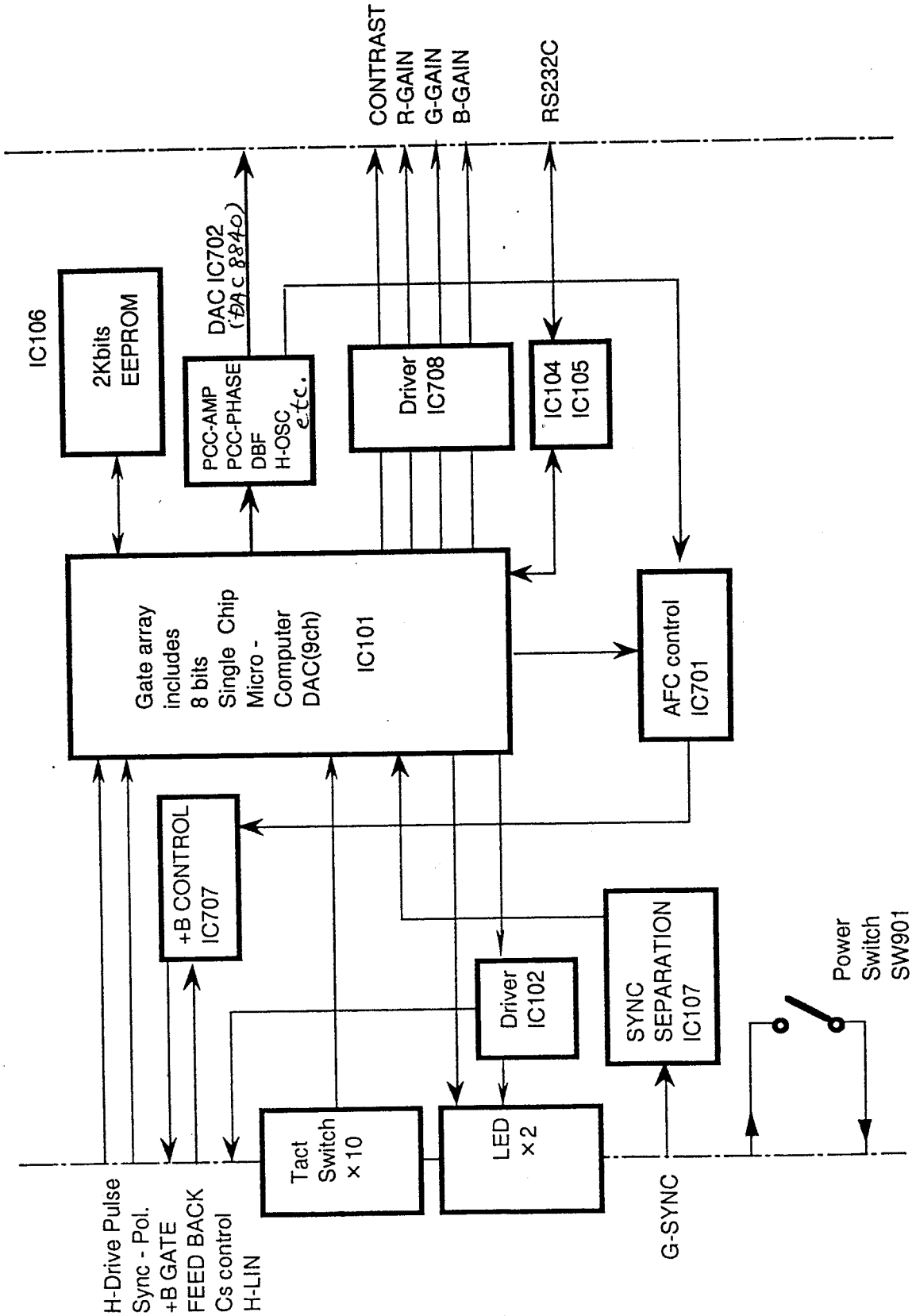
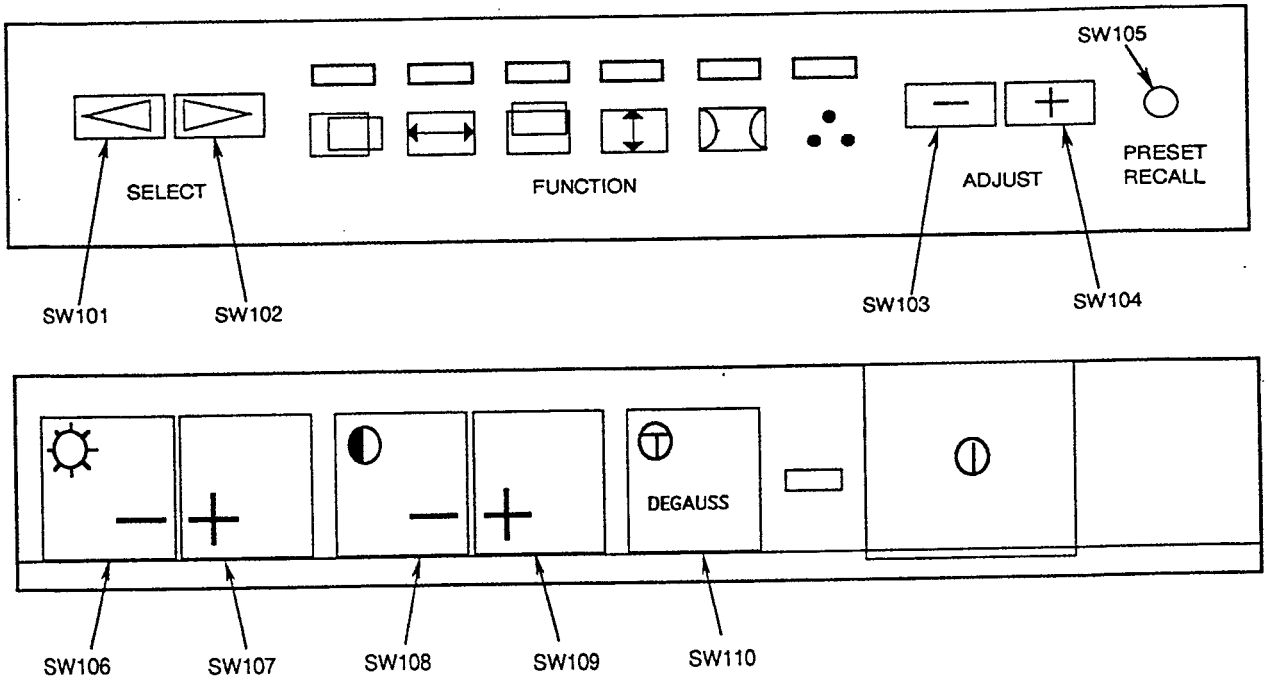


Fig. 2-1 Control Block





2.3.2 CONTROL FUNCTION

(1) Maximum timing number: 13 timings
(8 timings: for preset, 5 timings: for user)
There are 8 timings preset at factory which are shown in Fig. 2-2. And there are 5 additional timings available for user.

(2) To distinguish a timing, at least one of following conditions are necessary.
(a) $|fH' - fH| > 3$ KHz
(internal check uses 2 KHz in program)
(b) $|fv' - fv| > 5$ Hz
(internal check uses 4 Hz in program)
(c) different polarity of H-SYNC
(d) different polarity of V-SYNC

(3) In following conditions, the deflection circuit will be shut off to protect output transistor in the deflection circuit.
(a) Out of horizontal frequency range from 29.0KHz ~83 KHz and / or out of vertical frequency range 48.8Hz ~150Hz.
(b) No H or V sync signal.
(c) Unstable sync signal that $\Delta f v$ exceeds 4Hz and / or $\Delta f H$ exceeds 1.5KHz often.

(4) Each 12 timings has one common data for R, G, B- BIAS and GAIN, DBF-H, DBF-V, CONTRAST, BRIGHT.

(5) Select buttons function
(a) Normal mode ----- shift to right / left
(b) Enhanced mode ------ change lit-on pattern followed by adjustment items of Fig. 2-3
(c) Factory mode -------- ditto

(6) When +/- buttons of bright are pushed at the same time, the brightness becomes a middle level of brightness set at factory.

(7) RECALL FUNCTION
When pushing the recall button on front panel in case of normal mode and enhanced mode, the all factory adjustment items as shown in Fig. 2-3 that may have been overwritten by the user are restored.

2.3.3 Adjustment Mode

There are 4 adjustment modes in this monitor.

(a) Nomal mode
(b) Enhanced mode
(c) Factory mode
(d) Remote mode

(a) Normal mode

The normal mode is opened for the general end user operation and is available to adjust the raster size,position,PCC-AMP,color-select , brightness and contrast by the adjustment buttons on the front panel.

The adjusted picture conditions are automatically memorized into EEPROM (During pushing the adjust button, picure conditions change in terms that datas on CPU RAM and DAC output datas are changed. All CPU RAM datas are written into EEPROM just after the adjust button is released.).

(b) Enhanced mode

The enhanced mode has additional following items in addition to the normal mode.

(1) R,G,B-GAIN
(2) PCC-PHASE

To enter Enhanced mode, perform the following procedure.

1) Power off the monitor.
2) Push and hold both the plus (+) and minus (-) adjustment buttons while switching the monitor power on.
   After the power is on, release both buttons.
3) The adjustment function indicators blink for approximately 10 seconds.
   During this time, push and release both the (+) and (-) buttons one more time. When the indicators stop blinking, they should indicate the V-SIZE function as shown in Fig.2-3.

NOTE:

If the adjustment function indicators do not blink, or if both adjustment buttons were not pushed while the indicators were blinking, or if some other button was pushed, or the indicators do not show the display service status, the enhanced mode is not enabled. In this case, repeat steps 1) through 3).

4) Use the Adjustment Function Select Buttons to select the desired Adjustment Function Indicator Code as shown in Figure 2-3.
5) Use the Adjustment Control Buttons to perform the adjustments as required for optimum raster geometry or R, G, B-Gains.
6) All adjustments are automatically memorized.

To exit the enhanced mode, turn off the monitor.

(c) Factory mode

The factory mode has some additional items from enhanced mode, which are different adjust - ment items by the way to enable factory mode.

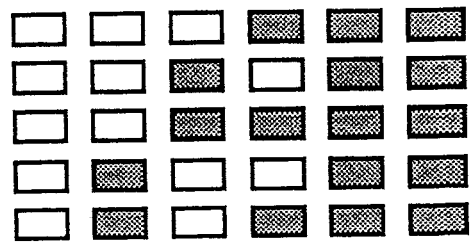
To enable factory mode by front panel

(c*-1) Power on while pushing and holding both + button of contrast and - button of brightness.
(c*-2) Both contrast LED and bright LED blink for approximately 10 seconds.
(c*-3) ITEM LED is lit on as follows.

Indication of LED

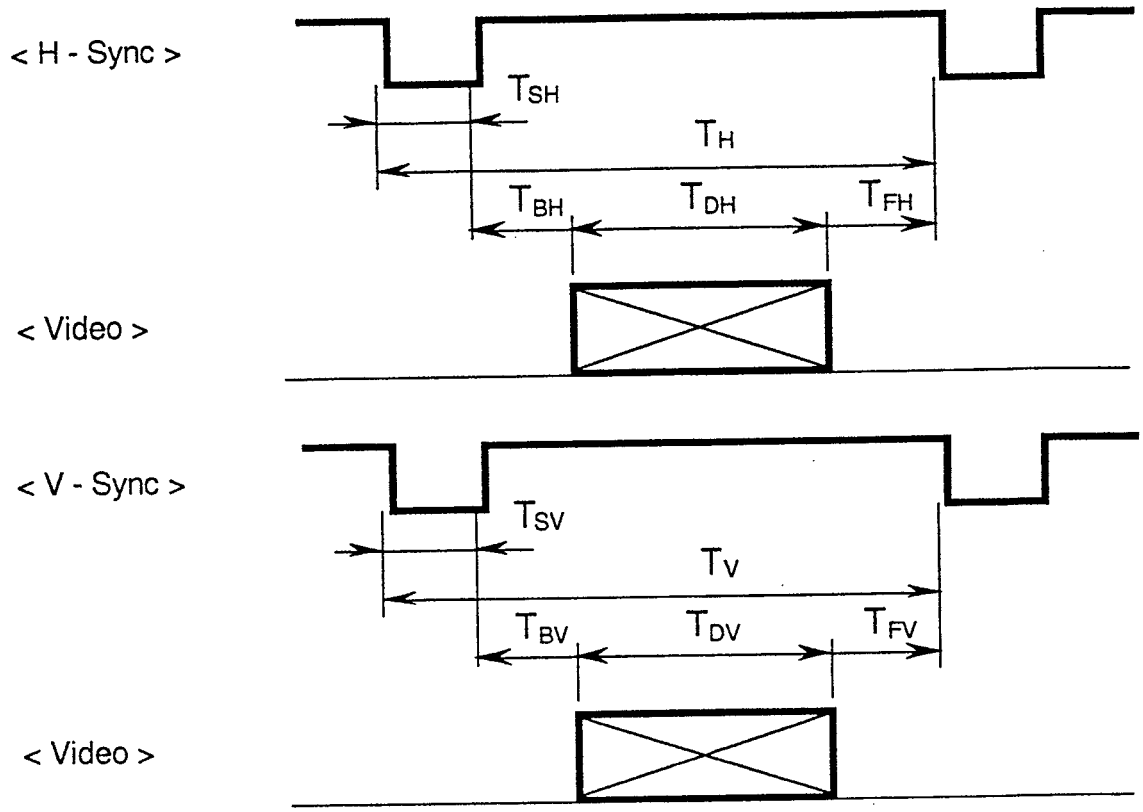
(c*-4) Push select button 5 times.

(c*-5) Push both + and - buttons of adjust at the same time.
(c*-6) Use the Adjustment Control Buttons to select the function .



(c*-7) To exit factory mode, turn off the monitor.

Fig. 2-2 Preset Timing Datas at Factory



	IBM PS / 2			APPLE MAC II	f_H = 48.36KHz f_V = 60.00Hz	f_H = 56.48KHz f_V = 70.07Hz
	640×480	640×400	640×350			
T_H	31.778	←	←	28.570	20.676	17.710
T_{SH}	3.813	←	←	2.120	2.092	1.810
T_{FH}	0.636	←	←	2.120	0.360	0.330
T_{BH}	1.907	←	←	3.170	2.462	1.920
T_{DH}	25.422	←	←	21.160	15.754	13.650
T_V	16.683	14.268	←	15.000	16.667	14.272
T_{SV}	0.064	←	←	0.086	0.124	0.106
T_{FV}	0.318	←	1.176	0.084	0.063	0.094
T_{BV}	1.048	1.112	1.906	1.114	0.600	0.513
T_{DV}	15.253	12.711	11.122	13.714	15.880	13.599
H - Sync	−	−	+	− Comp. Sync	−	−
V - Sync	−	+	−	− Comp. Sync	−	−

Fig. 2-3 Indication Table for LED(1)

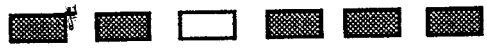
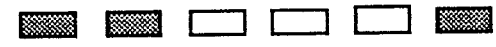
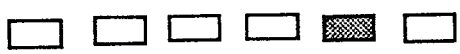
Indication of LED	ITEM	Normal Mode	Enhanced Mode	Factory Mode
	H-Phase	○	○	○
	H-SIZE	○	○	○
	V-POSI	○	○	○
	V-SIZE	○	○	○
	PCC-Amp	○	○	○
	COLOR-1	○	○	○
	COLOR-2	○	○	○
	COLOR-3	○	○	○
	PCC-Phase		○	○
	G-GAIN1		○	○
	B-GAIN1		○	○
	R-GAIN1		○	○
	G-GAIN2		○	○
	B-GAIN2		○	○
	R-GAIN2		○	○
	G-GAIN3		○	○
	B-GAIN3		○	○
	R-GAIN3		○	○
	Spare		○	○

Fig. 2-3 Indication Table for LED (2)

Indication of LED	ITEM	Normal Mode	Enhanced Mode	Factory Mode
	V-DBF-L			O
	V-DBF-H			O
	H-DBF-L			O
	H-DBF-H			O
	H-OSC-L			O
	H-OSC-H			O
	+B-LOW			O
	+BM1			O
	+BM2			O
	+B-HI			O
	NTSC/EOR			O
	SEPTIM			O
	CWD			O
	CFR			O

2.4 DEFLECTION BLOCK

Deflection block consists of horizontal deflection, and high voltage circuit, high voltage safety circuit, vertical deflection, side distortion correction and dynamic beam focus circuit.

2.4.1 HORIZONTAL DEFLECTION and HIGH VOLTAGE CIRCUIT

(1) The circuit description is shown in Fig. 2-4.

(2) The horizontal deflection circuit is a diode modulation type.
Q503 is the deflection output transistor. T501 is a drive transformer. Q502 is a drive switching transistor. Drive condition is controled by Q501.

(3) Screen control VR is usually equipped on FBT. However this monitor is differrent. Screen voltage is generated from flyback pulse. D511 rectifies the flyback pulse. Q514 and Q515 drive G2 voltage, controled by VR505 (SCREEN). IC501 is a operational amplifire working as dumper against G2 oscilation.

(4) C516, C514 and C515 are resonant capacitors. Q513 is controler of resonant capacitor. Q513 work to stabilize high voltage . Q513 is on during approx. 1/6 of flyback period. IF Q513 is on, resonant capacitor will be larger than it during Q513 is off. The larger resonant capacitor, the lower high voltage. On period is controled to keep the high voltage steady. High voltage detected by R559 is fed to IC501. then via IC705, Q702 and Q703 ,The gate pulse is fed in Q518 to drive Q513.

(5) The Cs is controled according to frequency of horizontal sync input (fH). Basically the lower fH needs the larger Cs. Q505,Q506 and Q507 are switched depends on fH as follows.

~32.9KHz	Q505~Q507 are on.
32.9~36.8KHz	Q505 and Q506 are on.
36.8~40.7KHz	Q505 and Q507 are on.
40.7~42.7KHz	Q505 is on.
42.7~46.6KHz	Q506 and Q507 are on.
46.6~52.4KHz	Q506 is on.
52.4~66.1KHz	Q507 is on.
66.1KHz~	All is off.

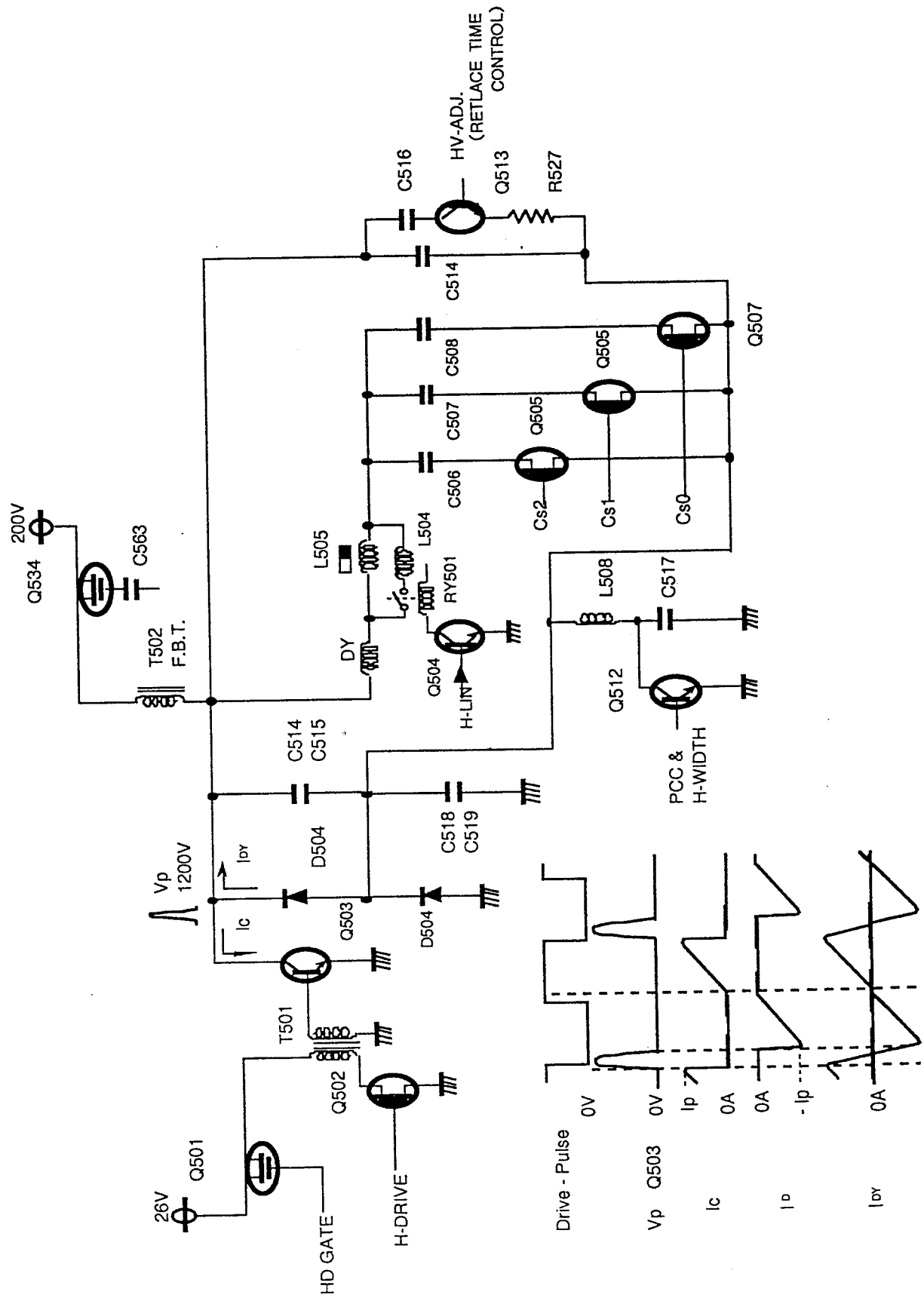
(6) +B voltage to FBT is controled by Q534. IC707 is PWM controler. Q534 gate is chopped by IC707 pin 9 output via Q705 and Q706. VR503 is for +B setting. +B feed back voltage is fed to IC707 pin 2 with output of Q709. CPU controls +B through IC702, IC703, IC704 and Q709 to maintain constant high voltage.

(7) PCC and horizontal width are controled by CPU. The parabolic wave is made by the diode network circuit (D704, D705, D706, D707, D708 and D713) on PCB-CONTROL. The vertical sawtooth wave and this parabolic are gain controled by IC702. Two signals and horizontal width control signal are fed to IC502 to add. The output of IC502 is fed to Q511 and Q512 to control potential at the capacitor C518 and C519.

(8) L505 is a linearity coil. Under 42.7KHz RY501 is off to maintain horizontal linearity. RY501 is a electric switch controled by CPU.

(9) Q536 and Q537 work as current driver to control horizontal raster positionning. Horizontal raster centering can be adjusted by VR503.

Fig. 2-4 Priciple of Horizontal Deflection



2.4.2 HIGH VOLTAGE SAFETY CIRCUIT

Safety circuits described below are equipped to prevent abnormal increase of the high voltage that may cause a X-radiation of harmful level. No modification should be applied to the high voltage supply and safety circuits.

The safety circuit works as the over voltage protector for a high voltage. Excessive high voltage is detected by R558 which is fed to Hold-Down circuit. In the case of high voltage exceeds 29KV, D520 on PCB-MAIN will be on.This limit voltage has been set by VR504.

Voltage across R554 is fed into gate of thyristor Q956 on PCB-POWER.

Q956 is on then Q952 is on.If Q952 is on, power will be suspended mode.

On suspended mode CPU in IC101 and CRT heater is on. Other circuits will be off.

High voltage protector also work when CRT beam current will be too high. R560 and R561 detect over beam current. Then Q519 will be on. D519 will drive the gate of Q956.

2.4.3 VERTICAL DEFLECTION CIRCUIT

The vertical deflection is performed by one IC and some components on PCB-VERT.

The oscillating frequency is controlled by IC701 on PCB-CONTROL.

The vertical size is controlled by IC101 pin 69 and analog sw IC402. V-linearity is also controlled by IC402. V-positioning is controlled by IC101 pin 67. Q405,Q404 and Q403 work as the current driver of V-positioning.

In the case of CRT has Z-coil, Q408 and Q409 will work as rotaion coil driver.

2.4.4 DYNAMIC BEAM FOCUS

In order to get best focus condition on the entire screen, the dynamic modulated focus voltage is supplied to FOCUS (D) connector in addition to static focus voltage. This modulated voltage is fed into DFOCUS via capacitor in the FBT after amplified by Q527 and Q528.

The modulated signal is combined with horizontal and vertical parabolic waves at Q530 and Q531. The source of these parabolic waves are outputs of 10 pin and 11 pin of DAC IC702.

2.5 VIDEO BLOCK

2.5.1 VIDEO AMPLIFIER

(1) The circuits of video amplifier are in PCB-VIDEO.

(2) There are three video amps for RGB inputs which have identical circuit configulation. For simplification, the green-channel amp. will be explained in this chapter.

(3) This amplifier is composed of the pre-amplifier section and the main-amplifier section. The video signal (0.7Vp-p STD) is amplified to approx. 2 V p-p in the pre-amplifier section and is amplified again to approx. 35 Vp-p during the main-amplifier section.

(4) The input signal is fed to 10 pin of IC200 via C2G0. The gain of IC200 is controlled by the DC voltage of 21 pin. The higher voltage of 13 pin makes the gain of IC200 larger. This IC also provides the function of the black level clamp. The clamp pulse which is added at the back-porch duration of video signal is fed to 14 pin. The voltage level of 15 pin is fixed, which is a control of brightness for RGB signal.

(5) The output signal of IC200 is connected to the main-amplifier (cascade connection of Q6G0 and Q6G1) via emitter follower Q2G0.

(6) The output of the main-amplifier (Q6G0 and Q6G1) is fed into the push-pull emitter follower Q6G2 and Q6G3.

(7) To display a pure white image on screen, both the DC level and the amplitude of video output signal should be adjusted as the 3 guns character -istics of CRT's are not identical. The DC level of cathod can be adjusted by VR6R0 (R-BIAS), VR6G0 (G-BIAS) and VR6B0 (B-BIAS).

2.5.2 SYNC SEPARATION CIRCUIT

(1) This monitor can be synchronized under following conditions.
  (a) Composite sync signal on green video
  (b) Composite sync signal (negative going)
  (c) Horizontal sync./ vertical sync signals (positive or negative going)

(2) The sync separation circuit provides following functions.
  (a) Seperating the composite sync signal from the green video signal
  (b) Amplifing the composite sync signal level to TTL level
  (c) Separating the horizontal and vertical sync signal from the composite sync signal

(3) This sync separation circuit is controlled by IC101 on PCB-CONTROL. The horizontal sync signal is input to 53 pin of IC101. And the output of

horizontal sync is fed from 49 pin of IC101 to 1 pin of IC701 on PCB-CONTROL.
Vertical sync signal is input to 46 pin of IC301. And the output of vertical sync is fed from 43 pin of IC101 to 30 pin of IC701 on PCB-CONTROL.
Clamp pulse is fed from 55 pin of IC101 to 14 pin of IC200 on PCB-CRT.
Sync on green signal is fed into IC107 to slice the composite sync out.

2.5.3 BLANKING CIRCUIT

(1) The blanking circuit and the bright control circuit are in PCB-MAIN.

(2) The blanking pulse generated by Q524,Q525 and Q523 in PCB-MAIN is fed to PCB-CRT.
The blanking pulse is approx. 24Vp-p negative going pulse.
This pulse is connected to G1 of CRT via the coupling capacity C543 on PCB-MAIN.
The blanking action is realized so that the voltage of G1 is kept in the negative potential during the blanking period.

(3) The brightness control is performed by adjusting the voltage of G1.
The brightness control is controled by the output of IC101 pin 65 on PCB-CONTROL.

3. ADJUSTMENT PROCEDURE

This display monitor can be memorized totally 13 different timings of screen images.
The first, internal adjustment mode which has no relation to timings of screen image should be explained.

*All adjustment LEDs in the front lid control blink at either maximum or minimum position.
*Contrast and brightness LEDs also blink at either maximum or minimum position.

3.1 PREPARATION

Set each VR to following position.

(1) Center position
(a) PCB-MAIN:
VR503 (H-CENT)
(b) PCB-CONTROL:
VR701 (+B-OSC)
(c) PCB-VIDEO:
VR211 (G1)

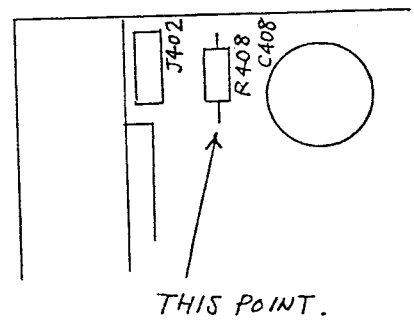
(2) Fully CCW position
(a) PCB-MAIN:
VR506 (HV-ADJ), VR504 (HV-PROT)
VR501 (H-DRIVE), VR505 (SCREEN)
(b) FBT:
D-FOCUS, FOCUS
(c) PCB-VIDEO:
VR6B0 (B-BIAS),VR6R0 (R-BIAS)
VR6G0 (G-BIAS)

(3) SW201 : At the position of 2 (Center)
SW502 : OFF (Left side at view of Monitor rear side)
SW501 : CRT SIDE

3.2 PRE-ADJUSTMENT

3.2.1 VERTICAL FREE RUNNING

(1) Connect a frequency counter to R408 lead on the PCB-VERT.



(2) After power on, turn VR505 (SCREEN) to get a proper brightness.

(3) Confirm that vertical free running frequency is 40Hz ±5Hz.

3.2.1.1 H-DRIVE ADJUSTMENT

(1) Input 78.9KHz timing signal.
(2) Connect a DC voltmeter across J511 #1 and #3 PCB-MAIN.
(3) Adjust VR501 (H-DRIVE) to get a minimum indication.
(4) Adjust H-SIZE about 300mm.

3.2.2 HORIZONTAL FREE RUNNING

(only input sync signal, Adjust at factory mode.)

(1) Hang frequency counter probe on the red lead wire across PCB-MAIN to horizontal deflection yoke.
(2) After input of horizontal frequency 30KHz sync signal, adjust (H-OSC-L) on the front panel to get 30KHz ±0.2KHz of free running frequency.
(3) While input of 78KHz horizontal sync signal, adjust (H-OSC-H) to get 78KHz ±0.2KHz of free running frequency.

3.2.3 DEFLECTION FREE RUNNING

(1) Connect a frequency counter to TP1 on PCB-CONROL.
(2) Input 30KHz sync signal.
(3) Set (H-OSC-L) on the front panel.
(4) Adjust the frequency 25KHz +/-200Hz by VR701.

This adjustment has been done PCB alone. After adjustment, the marking should be paint the VRs to indicate the adjustment position.

3.2.4 HIGH VOLTAGE ADJUSTMENT

(1) Connect high voltage meter to the CRT anode. During connecting the prove to the CRT anode, Power must be off for safety.
(2) 30KHz sync input with no video. Set VR506 (HV-ADJ) fully CCW position. Connect DC volt meter across J501 #3 of PCB-CONTROL to GND.
(3) Adjust DC volt value by select button is as follows.

TIMING [KHz]	ADJ. PATTERN	ADJ. VALUE Indicate of DC volt meter. [V]
31.5	+B, LOW	60 ± 0.3
48.1	+B, M1	95 ± 0.3
56.5	+B, M2	113 ± 0.3
78.9	+B, HIGH	170 ± 0.3

3.2.5 HEAT RUN

(1) Input full white signal.
(2) Check video output for each color.
(3) Unconnect signals. Adjust VR505 (SCREEN) on the PCB-MAIN and SW201 (PCB-VIDEO) turn upper position to get bright raster.
(4) Heat run more than 30 min.

3.3 INTERNAL ADJUSTMENT

3.3.1 H-DRIVE ADJUSTMENT

(1) Input 78.9KHz closs hatch reverse video timing signal.
(2) Connect a DC voltmeter across J511 #1 and #3 on PCB-MAIN.
(3) Adjust VR501(H-DRIVE) to get a minimum indication.
(4) Set VR501 folly CCW position.
(5) Turn the VR501 and set minimize value of DC volt meter indication.
(6) Adj. H-SIZE by select button about 300mm.

3.3.2 H-FREE RUNNING FREQUENCY ADJUST.

(1) Hang frequency counter probe on the lead wire across the PCB-MAIN and horizontal deflection yoke.
(2) Set factory mode. 30KHz sync input.
(3) ADjust (H-OSC-L) on the front panel to 30KHz +/- 0.2KHZ.
(4) 78KHz sync input.
(5) Adjust (H-OSC-H) on the front panel to 78KHz +/- 0.2KHz.

3.3.3 HIGH VOLTAGE AND HIGH VOLTAGE PROTECTOR SETTING

(1) Connect high voltage meter to the CRT anode.
(2) Connect DC volt meter across J511 #3 to GND on PCB-MAIN.
(3) Set VR506 (HV-ADJ) fully CW position.
(4) Adjust DC volt value by select button is as follows.

TIMING [KHz]	ADJ. PATTERN	ADJ. VALUE Indicate of DC volt meter. [V]
31.5	+B, LOW	60 ± 0.3
48.1	+B, M1	95 ± 0.3
56.5	+B, M2	113 ± 0.3
78.9	+B, HIGH	170 ± 0.3

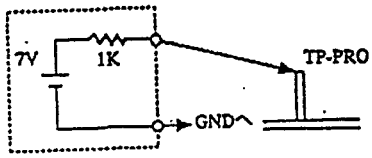
(5) Connect DC volt meter across TP-PRO to GND.
(6) Set VR505 (SCREEN) fully CCW position.
(7) Input 56.5KHz symc.
(8) Turn VR506 (HV-ADJ) slowly to CCW and set high voltage 24 ±0.3Kv.
(9) Turn VR504 (HV-LIMIT) slowly to CCW and set TP-PRO to GND DC voltage 5.60 ±0.05V.
(10) Set timing that is highest high voltage in the 4 timings.
Set VR506 (HV-ADJ) fully CW position.
Read high voltage value. Turn VR506 to CW

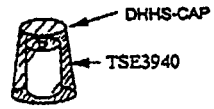
and set high voltage +0.5Kv increased.

(11) ADD DC7V across TP-PRO to GND through the 1KΩ.

(12) Check if HV-LIMITTER does not work after power off and on.
5sec interval more than 3 times.

(13) Cover VR504, VR506 by the DHHS-CAP and fix it by TSE3940 glue.



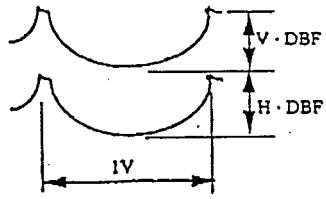


*CAUTION
HV-ADJ (VR506) and HV-LIMIT (VR504) are sealed and no field serviceable parts to avoid exposure of X-ray. Please contact to qualified personnel of MITSUBISHI, if need to re-adjust.

3.3.4 SUB-FOCUS ADJUSTMENT

Connect oscillo-graph across TP-DPF to GND on PCB-MAIN.

(1) Input sync signal of fH = 31.5KHz.
(2) Adjust (H-DBFL) on the front panel to get 400 ± 10V horizontal parabolic wave.
(3) Input sync signal of fH = 78.9KHz.
(4) Adjust (H-DBFH) on the front panel to get 300 ± 10V horizontal parabolic wave.
(5) Input sync signal of fv = 50Hz.
(6) Adjust (V-DBFL) on the front panel to get 100 ± 10V.
(7) Input sync signal of fv = 120Hz.
(8) Adjust (V-DBFH) on the front panel to get 100 ± 10V.



3.3.5 HORIZONTAL RASTER POSITION

(1) Turn VR505 (SCREEN) on PCB-MAIN until dim back-rater appears.
(2) Set SW501(H-CENT SW) and VR503(H-CENT) to get raster position roughly at the center of CRT.

3.3.6 H,V SIZE,POSITIONING, PCC-AMP, PCC-PHASE

Adjust for all preset timing at factory mode.

(1) Input full white signal.
(2) Adjust V-SIZE and V-PHASE by the front panel.
(3) Adjust PCC-AMP and PCC-PHASE to optimum geometry.
(4) Adjust H-SIZE and V- SIZE by the front panel.
V-SIZE 225 ± 8mm
H-SIZE 300 ± 8mm

3.3.7 CRT CUT-OFF ADJUSTMENT

(1) 56.5KHz/70Hz sync input with no video.
(2) Set contrast to maximum position by contrast buttons on front panel. (LED will blink)
(3) Push bright (+) and (-) buttan at the same time to get brightness center.
(4) Connect digital voltmeter to the test point G2 on the PCB-VIDEO.
(5) Adjust VR505(SCREEN) on PCB-MAIN to 700V ± 5V.
(6) Set VR6B0(B-BIAS) ,VR6G0(G-BIAS),VR6R0 (R-BIAS) fully counter clockwise.
(7) Set VR211(G1) on PCB-VIDEO to get dim raster.
(8) Adjust BIAS VRs to get white raster.
Do not adjust the brightest color BIAS VR on this adjustment.
(9) Set the VR211 (G1) to get a dim raster 0.3 cd/m2.

3.3.8 BRIGHTNESS AND WHITE BALANCE

(1) 56.5KHz / 70Hz green window (apr. 80x80mm) input. (0.7Vp-p)
(2) Set contrast control to maximum position by contrast button on the front panel (LED blinks.)
(3) Push bright (+) and (-) buttan at the same time to get brightness center.
(4) Adjust (G-GAIN-1) on the front panel to (color1, 3 : 73 color2 : 68cd/m2).
(5) Input R, B video signal together with G, then adjust only (R-GAIN-1) , (B-GAIN-1) controls to get color coordination X=0.283 ±0.02, Y=0.297 ±0.02.
(6) Make sure that brightness is 95 cd/m2 - 120 cd/m2 at the full white pattern.
(7) Set brightness 30 nits by contrast control.
X,Y color coordination should be with in +/-0.02

from the maximum contrast.

(8) Set color 2 and 3 in same method.

Color 2	X=0.313	Y=0.329	6550 ° K
Color 3	X=0.283	Y=0.297	9300 ° K

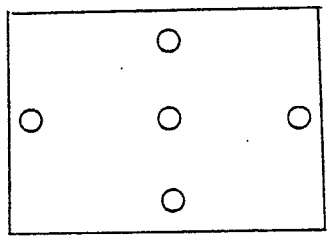
3.3.9 FOCUS ADJUSTMENT

Input signal 56.5KHz/70Hz.

(1) Display white all (H) characters pattern on the entire screen.

(2) Adjust the FOCUS and DFOCUS VR on the FBT to get best focus on the entire screen.

(3) After adjustment, the marking should be paint the VRs to indicate the adjustment position.



focus check points

PRESET TIMING

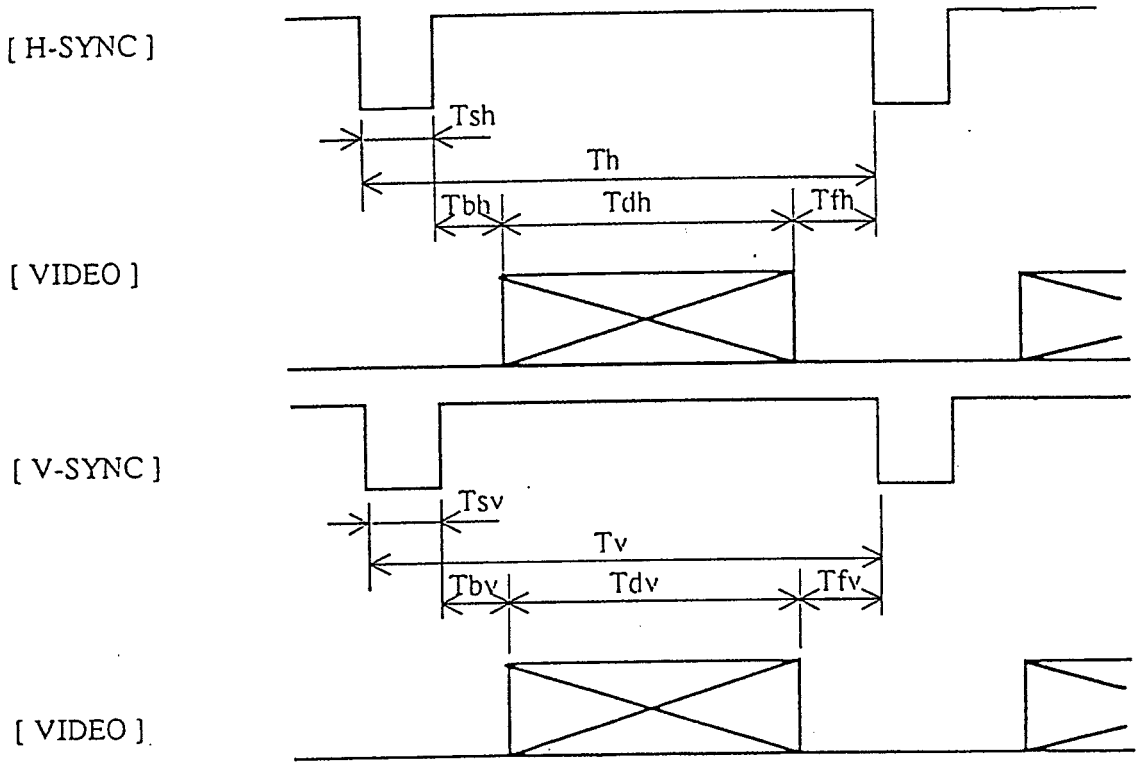
※ --- PRESET TIMING

※※ ---- CHECK USE ONLY

FH	Fv	MODEL						
		1	2	3	4	5	6	
78KHz	73Hz							
78.9KHz	74.1Hz	※※						
64KHz	60Hz							
56.5KHz	70Hz	※						
48.36KHz	60Hz	※						
48.1KHz	72.2Hz							Super VGA
35KHz	67Hz	※						APPLE MAC 2
31.5KHz	60Hz(480ライン)	※						PS／2
	70Hz(400ライン)	※						
	70Hz(350ライン)	※						

MODEL 1 --- FFY7705

タイミングチャート



(1) FH=78.0KHz (1280×1024)

水平周期	(Th)----------	12.820 μ sec (78.00KHz)
水平同期	(Tsh)----------	0.915 μ sec
水平フロントポーチ	(Tfh)----------	0.228 μ sec
水平バックポーチ	(Tbh)----------	1.907 μ sec
水平映像表示	(Tch)----------	9.770 μ sec
垂直周期	(Tv)----------	13.690 msec (73.0Hz)
垂直同期	(Tsv)----------	0.038 msec
垂直フロントポーチ	(Tfv)----------	0.038 msec
垂直バックポーチ	(Tbv)----------	0.487msec
垂直映像表示	(Tcv)----------	13.128msec
同期信号入力/Sync	コンポジットシンク H、V：NEG. /COMPOSIT SYNC	

タイミングチャート

(2) FH=63.9KHz (1280×1024)

水平周期	(Th)----------	15.636 μsec (63.9KHz)
水平同期	(Tsh)----------	1.018 μsec
水平フロントポーチ	(Tfh)----------	0.727 μsec
水平バックポーチ	(Tbh)----------	2.255 μsec
水平映像表示	(Tch)----------	11.636 μsec
垂直周期	(Tv)----------	16.684 msec (60.0Hz)
垂直同期	(Tsv)----------	0.078 msec
垂直フロントポーチ	(Tfv)----------	0.016 msec
垂直バックポーチ	(Tbv)----------	0.578 msec
垂直映像表示	(Tcv)----------	16.012 msec
同期信号入力/SYNC	セパレートシンク H,V :NEG./SEPARATE	

(3) FH=56.48KHz

水平周期	(Th)----------	17.706 μsec (56.48KHz)
水平同期	(Tsh)----------	1.813 μsec
水平フロントポーチ	(Tfh)----------	0.320 μsec
水平バックポーチ	(Tbh)----------	1.920 μsec
水平映像表示	(Tch)----------	13.653 μsec
垂直周期	(Tv)----------	14.272 msec (70.07Hz)
垂直同期	(Tsv)----------	0.106 msec
垂直フロントポーチ	(Tfv)----------	0.053 msec
垂直バックポーチ	(Tbv)----------	0.514 msec
垂直映像表示	(Tcv)----------	13.599 msec
同期入力/SYNC	セパレートシンク H,V : NEG./SEPARATE	

(4) FH=48.36KHz

水平周期	(Th)----------	20.676 μ sec (48.36KHz)
水平同期	(Tsh)----------	2.092 μ sec
水平フロントポーチ	(Tfh)----------	0.360 μ sec
水平バックポーチ	(Tbh)----------	2.462 μ sec
水平映像表示	(Tch)----------	15.754 μ sec
垂直周期	(Tv)----------	16.667 msec (60.00Hz)
垂直同期	(Tsv)----------	0.124 msec
垂直フロントポーチ	(Tfv)----------	0.063 msec
垂直バックポーチ	(Tbv)----------	0.600 msec
垂直映像表示	(Tcv)----------	15.880 msec
同期入力/SYNC	セパレートシンクH , V ： NEG . /SEPARATE	

(5) FH=48.1KHz (Super VGA)

水平周期	(Th)----------	20.800 μ sec (48.08KHz)
水平同期	(Tsh)----------	2.400 μ sec
水平フロントポーチ	(Tfh)----------	1.120 μ sec
水平バックポーチ	(Tbh)----------	1.280 μ sec
水平映像表示	(Tch)----------	16.000 μ sec
垂直周期	(Tv)----------	13.853 msec (72.19Hz)
垂直同期	(Tsv)----------	0.125 msec
垂直フロントポーチ	(Tfv)----------	0.770 msec
垂直バックポーチ	(Tbv)----------	0.478 msec
垂直映像表示	(Tcv)----------	12.480 msec
同期入力/Sync	セパレートシンクH , V ： POSI . /SEPARATE	

(6) APPLE MAC II

水平周期	(Th)----------	28.570 μ sec (35.00KHz)
水平同期	(Tsh)----------	2.120 μ sec
水平フロントポーチ	(Tfh)----------	2.120 μ sec
水平バックポーチ	(Tbh)----------	3.170 μ sec
水平映像表示	(Tch)----------	21.160 μ sec
垂直周期	(Tv)----------	15.000 msec (66.67Hz)
垂直同期	(Tsv)----------	0.086 msec
垂直フロントポーチ	(Tfv)----------	0.084 msec
垂直バックポーチ	(Tbv)----------	1.114 msec
垂直映像表示	(Tcv)----------	13.714 msec
同期入力/SYNC	コンポジットシンク：H , V NEG . /COMPSIT SYNC	

(7) IBM PS/2

	640×480	640×400	640×350
水平周波数 (Th)	31.778 μ sec (31.50KHz)	←	←
水平同期 (Tsh)	3.813 μ sec	←	←
水平プロントポーチ (Tfh)	0.636 μ sec	←	←
水平バックポーチ (Tbh)	1.907 μ sec	←	←
水平映像表示 (Tch)	25.422 μ sec	←	←
垂直周波数 (Tv)	16.683msec (59.94Hz)	14.268msec (70.0Hz)	14.268msec (70.0Hz)
垂直同期 (Tsv)	0.064msec	0.064msec	0.064msec
垂直プロントポーチ (Tfv)	0.318msec	0.318msec	1.176msec
垂直バックポーチ (Tbv)	1.048msec	1.112msec	1.906msec
垂直映像表示 (Tcv)	15.253msec	12.711msec	11.122msec
同期信号入力 Sync	SEPARATE H,V NEG.	SEPARATE H NEG. V POSI.	SEPARATE H POSI. V NEG.

4. WAVEFORM／信号波形 (Y chasis)

MEASUREMENT CONDITION／測定条件

1. Input Signal／入力信号

fH63.90KHz

fH60Hz

Picture : 8color bar signal

2. Bright, Contrast Control／ブライトコントラストコントロール

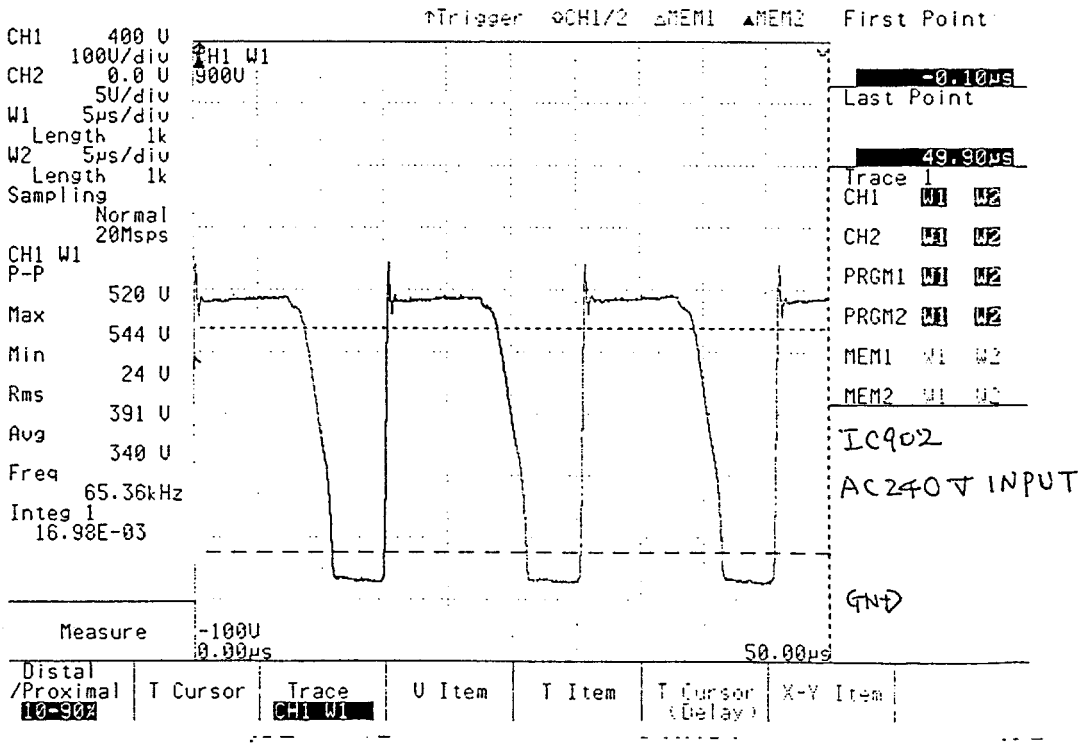
Bright : Center

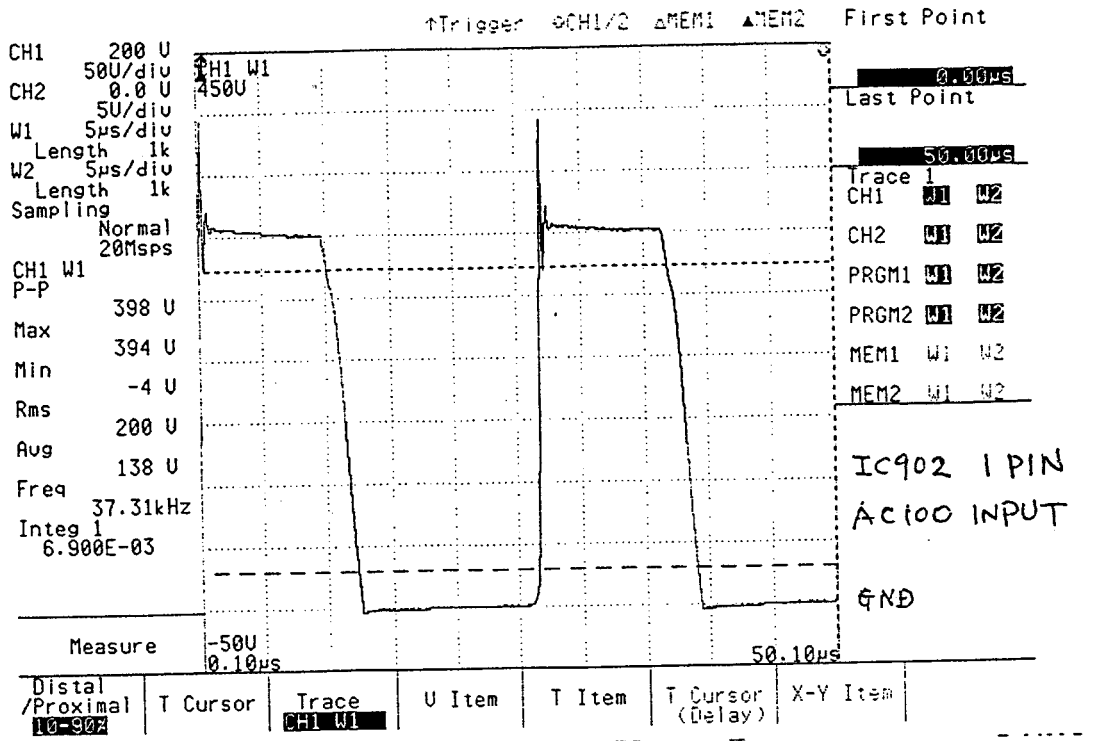
Cont : Max

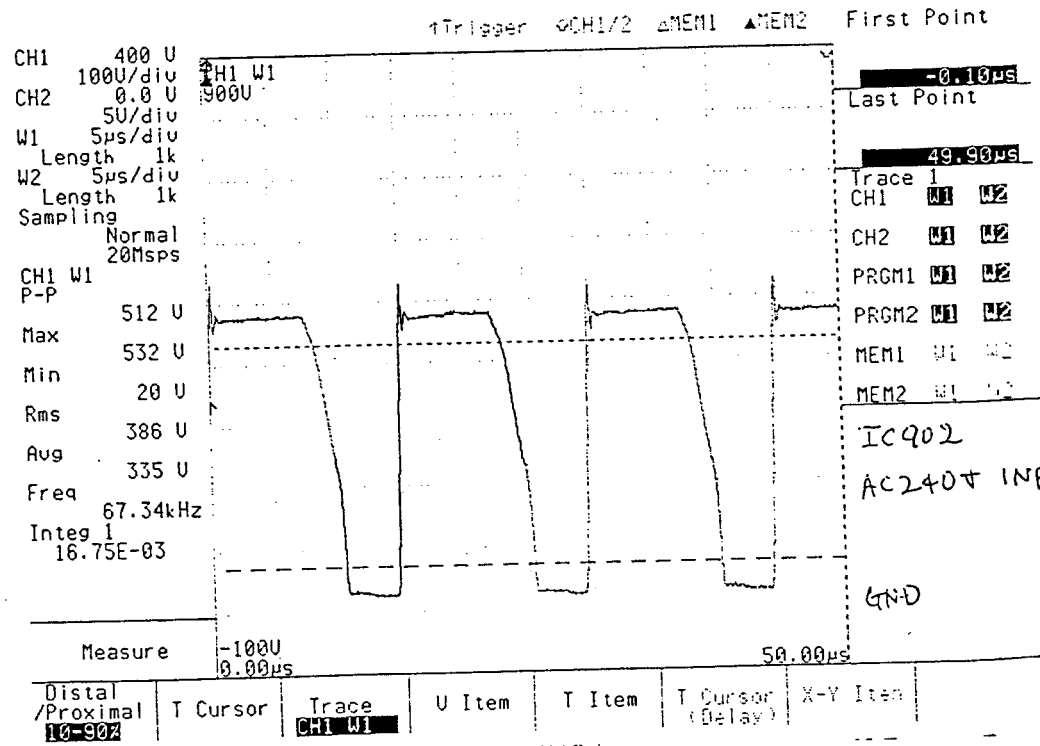
3. Measurement Tool／測定計器

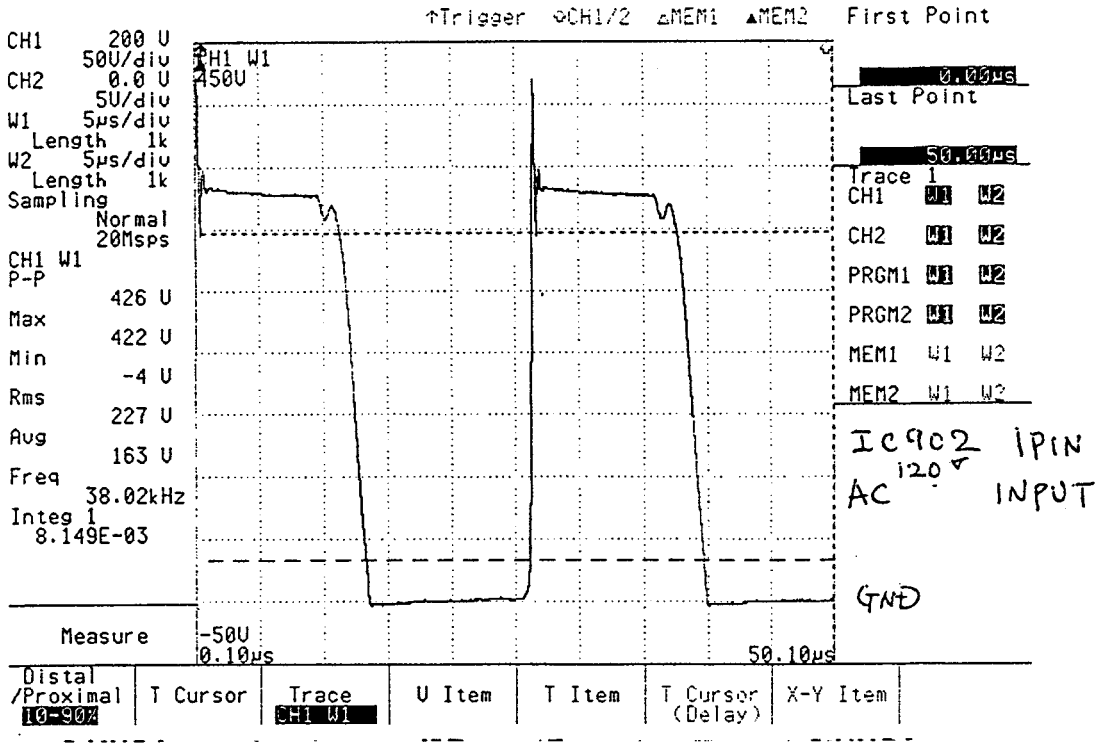
Digital Osciloscope YOKOGAWA LTD.

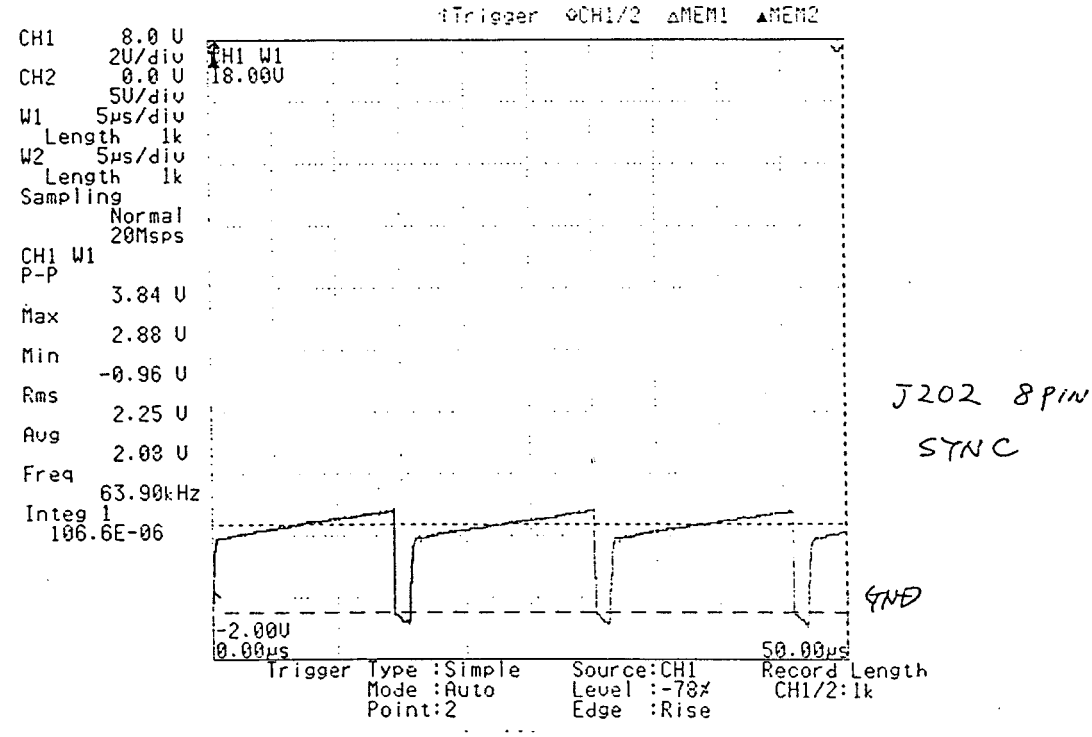
DL2140 200MS/S 300MHz

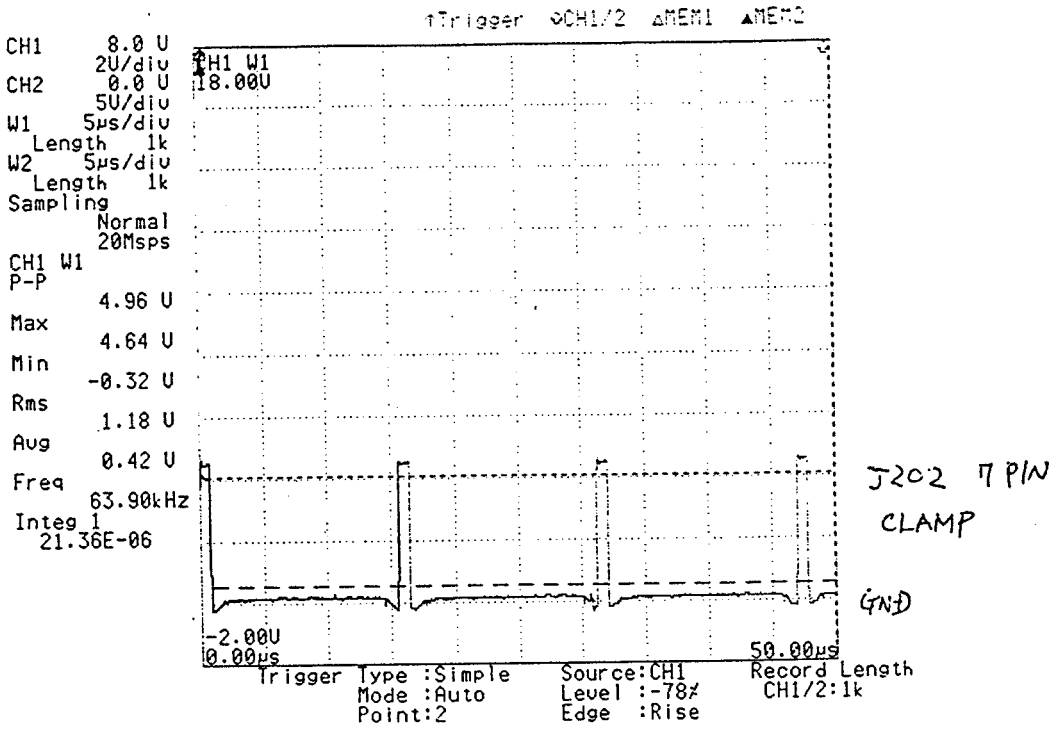


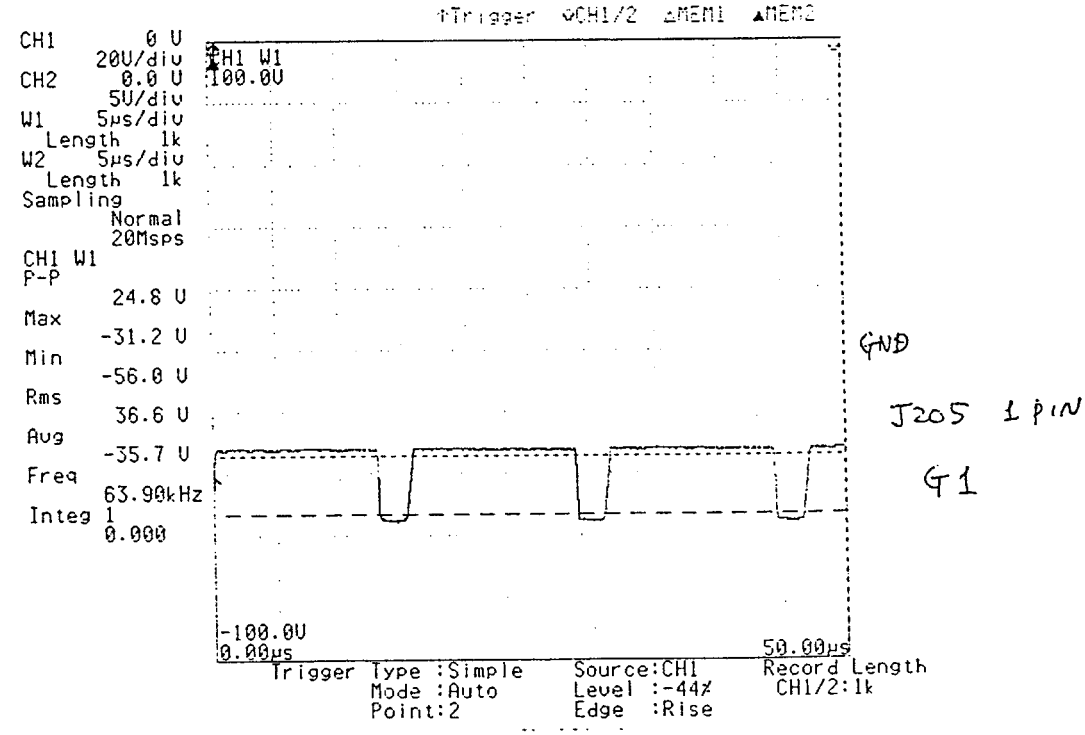

↑Trigger ⊕CH1/2 △MEM1 ▲MEM2 First Point
CH1 200 V
50V/div
CH2 0.0 V
5V/div
W1 5µs/div
Length 1k
W2 5µs/div
Length 1k
Sampling
Normal
20Msps
CH1 W1
P-P 398 V
Max 394 V
Min -4 V
Rms 200 V
Avg 138 V
Freq 37.31kHz
Integ 1
6.900E-03
CH1 W1
450V
-50V
0.10µs
50.10µs
0.00µs
Last Point
50.00µs
Trace 1
CH1 W1 W2
CH2 W1 W2
PRGM1 W1 W2
PRGM2 W1 W2
MEM1 W1 W2
MEM2 W1 W2
IC902 1 PIN
AC100 INPUT
GND
Measure
Distal /Proximal 10-90%
T Cursor
Trace CH1 W1
U Item
T Item
T Cursor (Delay)
X-Y Item

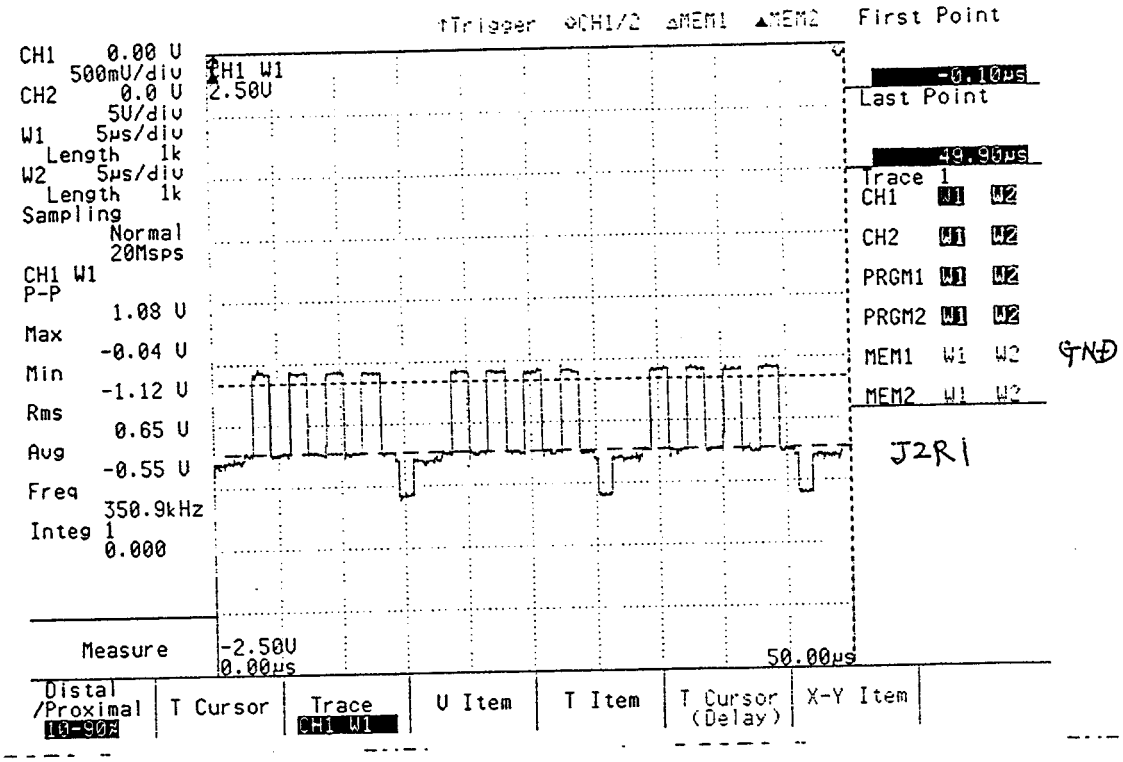

↑Trigger ⊕CH1/2 △MEM1 ▲MEM2 First Point
CH1 400 V
100V/div
CH2 0.0 V
5V/div
W1 5µs/div
Length 1k
W2 5µs/div
Length 1k
Sampling
Normal
20Msps
CH1 W1
P-P 512 V
Max 532 V
Min 20 V
Rms 386 V
Avg 335 V
Freq 67.34kHz
Integ 1
16.75E-03
CH1 W1
900V
-100V
0.00µs
50.00µs
-0.10µs
Last Point
49.90µs
Trace 1
CH1 W1 W2
CH2 W1 W2
PRGM1 W1 W2
PRGM2 W1 W2
MEM1 W1 W2
MEM2 W1 W2
IC902
AC240V INPUT (50HZ)
GND
Measure
Distal /Proximal 10-90%
T Cursor
Trace CH1 W1
U Item
T Item
T Cursor (Delay)
X-Y Item

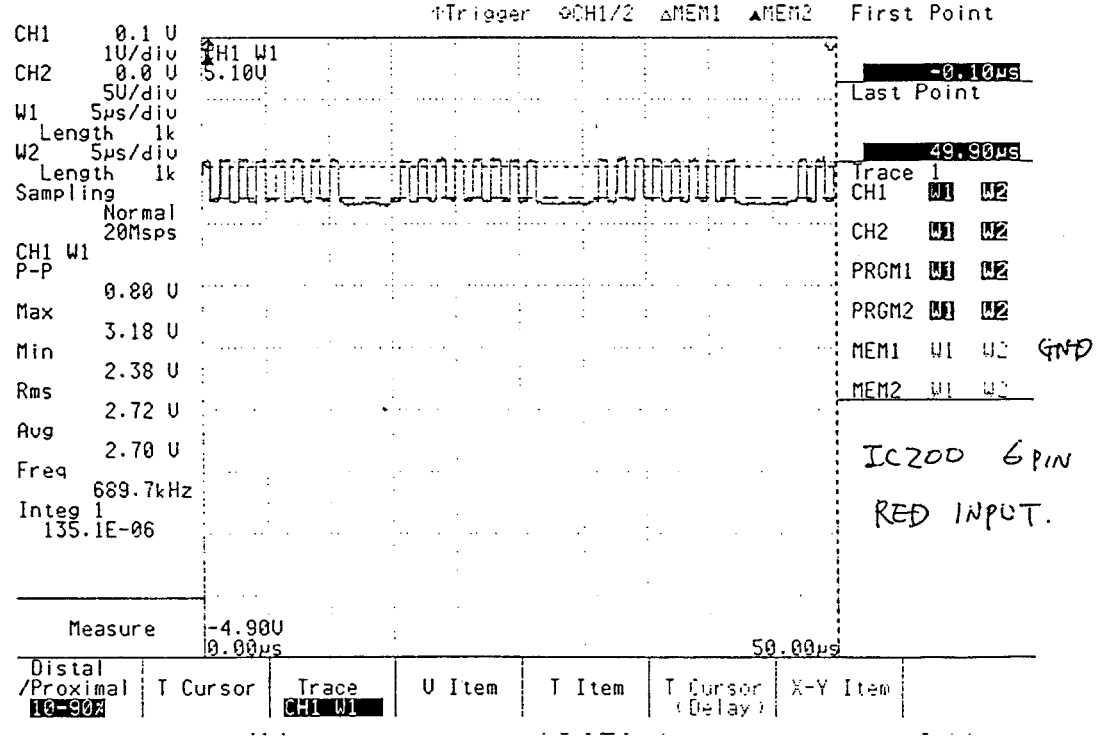

↑Trigger ◇CH1/2 △MEM1 ▲MEM2 First Point
CH1 200 U
50U/div
CH2 0.0 U
5U/div
W1 5µs/div
Length 1k
W2 5µs/div
Length 1k
Sampling
Normal
20Msps
CH1 W1
P-P
426 U
Max
422 U
Min
-4 U
Rms
227 U
Avg
163 U
Freq
38.02kHz
Integ 1
8.149E-03
CH1 W1
450U
0.00µs
Last Point
50.00µs
Trace 1
CH1 W1 W2
CH2 W1 W2
PRGM1 W1 W2
PRGM2 W1 W2
MEM1 W1 W2
MEM2 W1 W2
Measure
-50U
0.10µs
50.10µs
Distal /Proximal 10-90%
T Cursor
Trace CH1 W1
V Item
T Item
T Cursor (Delay)
X-Y Item
IC902 1PIN
AC 120V INPUT
GND

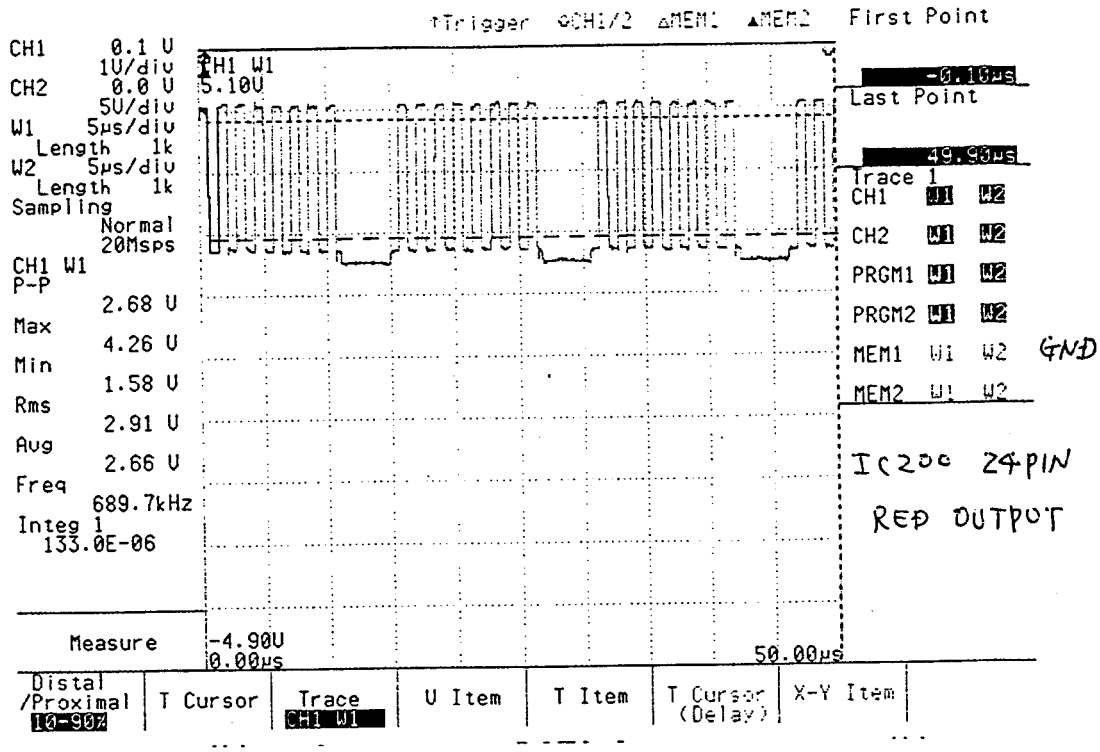

↑Trigger ◇CH1/2 △MEM1 ▲MEM2
CH1 8.0 U
2U/div
CH2 0.0 U
5U/div
W1 5µs/div
Length 1k
W2 5µs/div
Length 1k
Sampling
Normal
20Msps
CH1 W1
P-P
3.84 U
Max
2.88 U
Min
-0.96 U
Rms
2.25 U
Avg
2.08 U
Freq
63.90kHz
Integ 1
106.6E-06
CH1 W1
18.00V
-2.00V
0.00µs
50.00µs
Trigger Type :Simple
Mode :Auto
Point:2
Source:CH1
Level :-78%
Edge :Rise
Record Length
CH1/2:1k
J202 8PIN
SYNC
GND

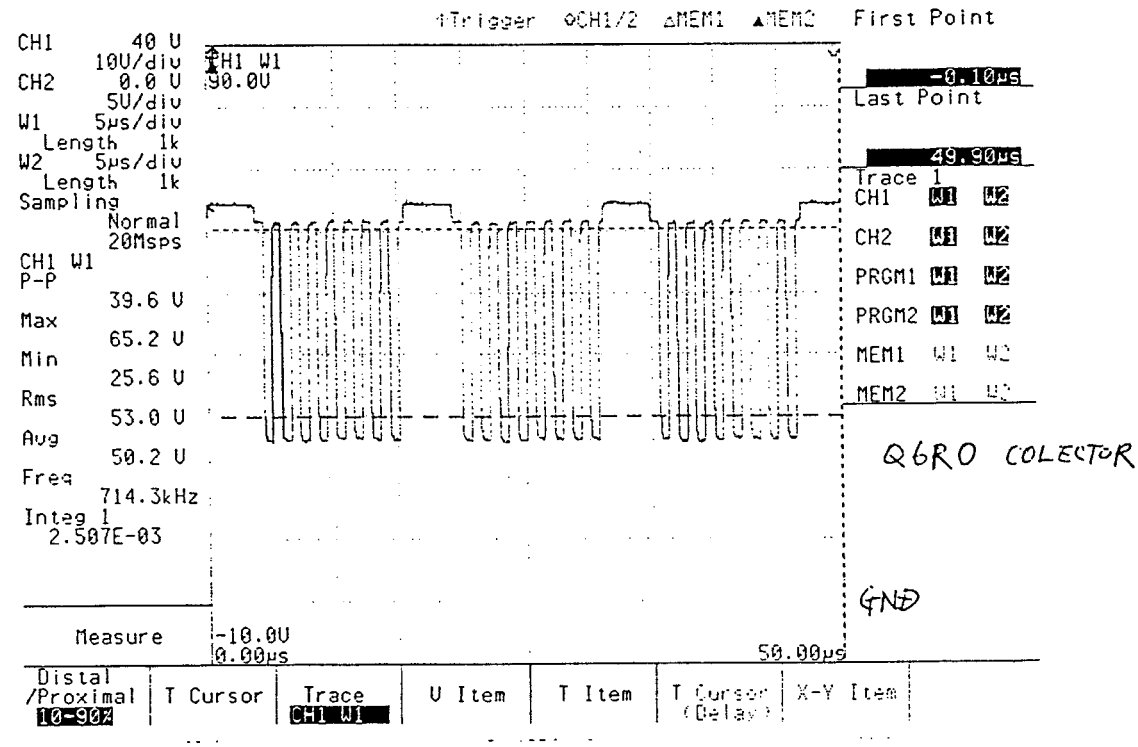

↑Trigger ◇CH1/2 △MEM1 ▲MEM2
CH1 8.0 U
2U/div
CH2 0.0 U
5U/div
W1 5µs/div
Length 1k
W2 5µs/div
Length 1k
Sampling
Normal
20Msps
CH1 W1
P-P
4.96 U
Max
4.64 U
Min
-0.32 U
Rms
1.18 U
Avg
0.42 U
Freq
63.90kHz
Integ 1
21.36E-06
CH1 W1
18.00U
-2.00U
0.00µs
50.00µs
Trigger Type :Simple
Mode :Auto
Point:2
Source:CH1
Level :-78%
Edge :Rise
Record Length
CH1/2:1k
J202 7 PIN
CLAMP
GND

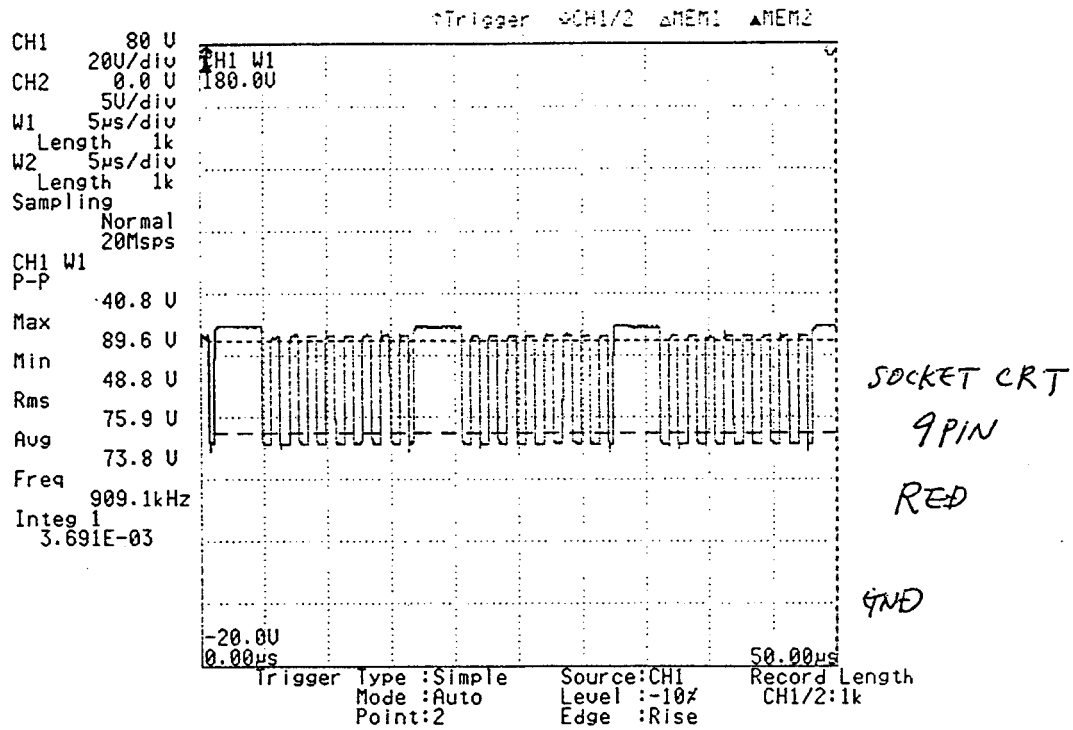

↑Trigger ◇CH1/2 △MEM1 ▲MEM2
CH1 0 U
20U/div
CH2 0.0 U
5U/div
W1 5µs/div
Length 1k
W2 5µs/div
Length 1k
Sampling
Normal
20Msps
CH1 W1
P-P
24.8 U
Max
-31.2 U
Min
-56.0 U
Rms
36.6 U
Avg
-35.7 U
Freq
63.90kHz
Integ 1
0.000
CH1 W1
100.0U
-100.0U
0.00µs
50.00µs
Trigger Type :Simple
Mode :Auto
Point:2
Source:CH1
Level :-44%
Edge :Rise
Record Length
CH1/2:1k
GND
J205 1 PIN
G1

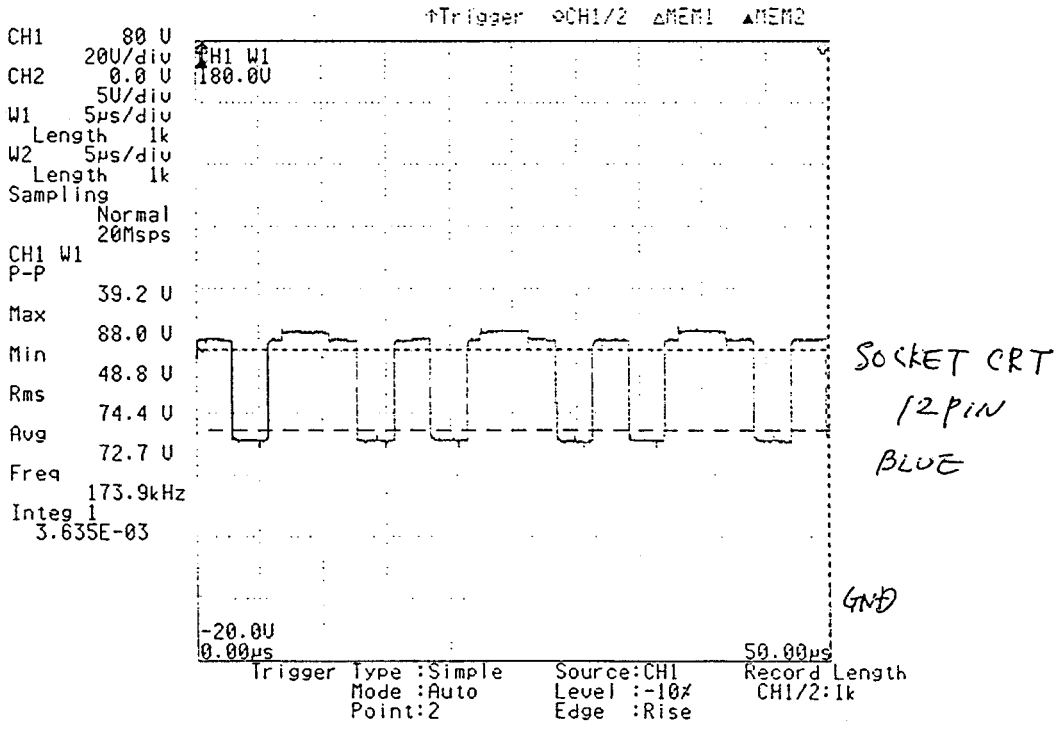

↑Trigger ⊕CH1/2 △MEM1 ▲MEM2 First Point
CH1 0.00 U
500mU/div
CH2 0.0 U
5U/div
W1 5µs/div
Length 1k
W2 5µs/div
Length 1k
Sampling
Normal
20Msps
CH1 W1
P-P
1.08 U
Max
-0.04 U
Min
-1.12 U
Rms
0.65 U
Avg
-0.55 U
Freq
350.9kHz
Integ 1
0.000
CH1 W1
2.50U
-0.10µs
Last Point
49.90µs
Trace 1
CH1 W1 W2
CH2 W1 W2
PRGM1 W1 W2
PRGM2 W1 W2
MEM1 W1 W2
MEM2 W1 W2
GND
J2R1
Measure
-2.50U
0.00µs
50.00µs
Distal /Proximal 10-90%
T Cursor
Trace CH1 W1
U Item
T Item
T Cursor (Delay)
X-Y Item

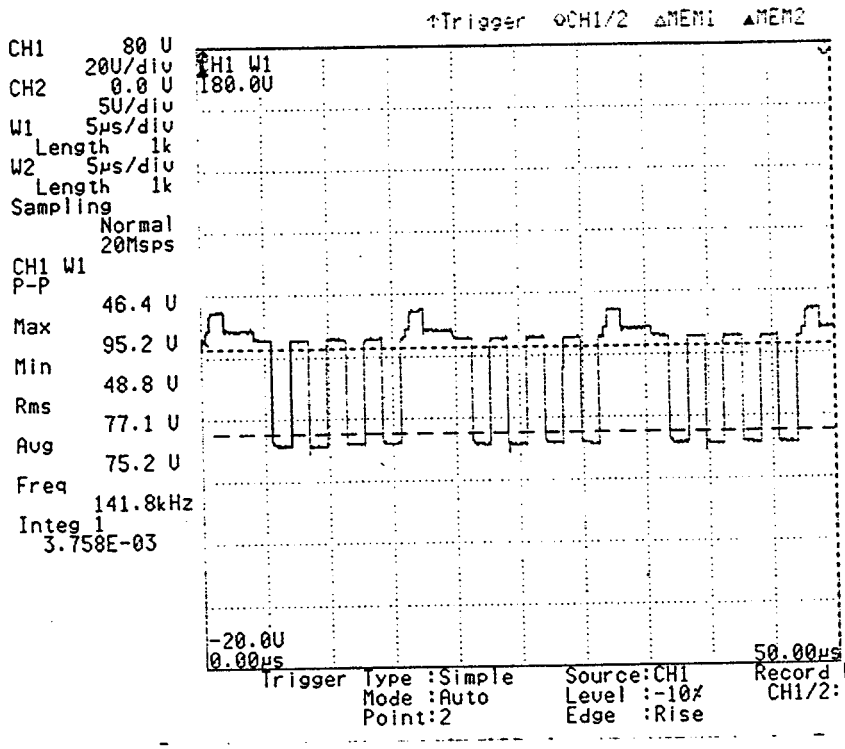

↑Trigger ⊕CH1/2 △MEM1 ▲MEM2 First Point
CH1 0.1 U
1U/div
CH2 0.0 U
5U/div
W1 5µs/div
Length 1k
W2 5µs/div
Length 1k
Sampling
Normal
20Msps
CH1 W1
P-P
0.80 U
Max
3.18 U
Min
2.38 U
Rms
2.72 U
Avg
2.70 U
Freq
689.7kHz
Integ 1
135.1E-06
CH1 W1
5.10U
-0.10µs
Last Point
49.90µs
Trace 1
CH1 W1 W2
CH2 W1 W2
PRGM1 W1 W2
PRGM2 W1 W2
MEM1 W1 W2
MEM2 W1 W2
GND
IC200 6 PIN
RED INPUT.
Measure
-4.90U
0.00µs
50.00µs
Distal /Proximal 10-90%
T Cursor
Trace CH1 W1
U Item
T Item
T Cursor (Delay)
X-Y Item


↑Trigger ⊕CH1/2 ΔMEM1 ▲MEM2 First Point
CH1 0.1 U
1U/div
CH2 0.0 U
5U/div
W1 5µs/div
Length 1k
W2 5µs/div
Length 1k
Sampling
Normal
20Msps
CH1 W1
P-P
2.68 U
Max
4.26 U
Min
1.58 U
Rms
2.91 U
Avg
2.66 U
Freq
689.7kHz
Integ 1
133.0E-06
CH1 W1
5.10U
-4.90U
0.00µs
50.00µs
-0.10µs
Last Point
49.90µs
Trace 1
CH1 W1 W2
CH2 W1 W2
PRGM1 W1 W2
PRGM2 W1 W2
MEM1 W1 W2
MEM2 W1 W2
GND
IC200 24PIN
RED OUTPUT
Measure
Distal /Proximal 10-90%
T Cursor
Trace CH1 W1
U Item
T Item
T Cursor (Delay)
X-Y Item


↑Trigger ⊕CH1/2 ΔMEM1 ▲MEM2 First Point
CH1 40 U
10U/div
CH2 0.0 U
5U/div
W1 5µs/div
Length 1k
W2 5µs/div
Length 1k
Sampling
Normal
20Msps
CH1 W1
P-P
39.6 U
Max
65.2 U
Min
25.6 U
Rms
53.0 U
Avg
50.2 U
Freq
714.3kHz
Integ 1
2.507E-03
CH1 W1
90.0U
-10.0U
0.00µs
50.00µs
-0.10µs
Last Point
49.90µs
Trace 1
CH1 W1 W2
CH2 W1 W2
PRGM1 W1 W2
PRGM2 W1 W2
MEM1 W1 W2
MEM2 W1 W2
Q6R0 COLECTOR
GND
Measure
Distal /Proximal 10-90%
T Cursor
Trace CH1 W1
U Item
T Item
T Cursor (Delay)
X-Y Item

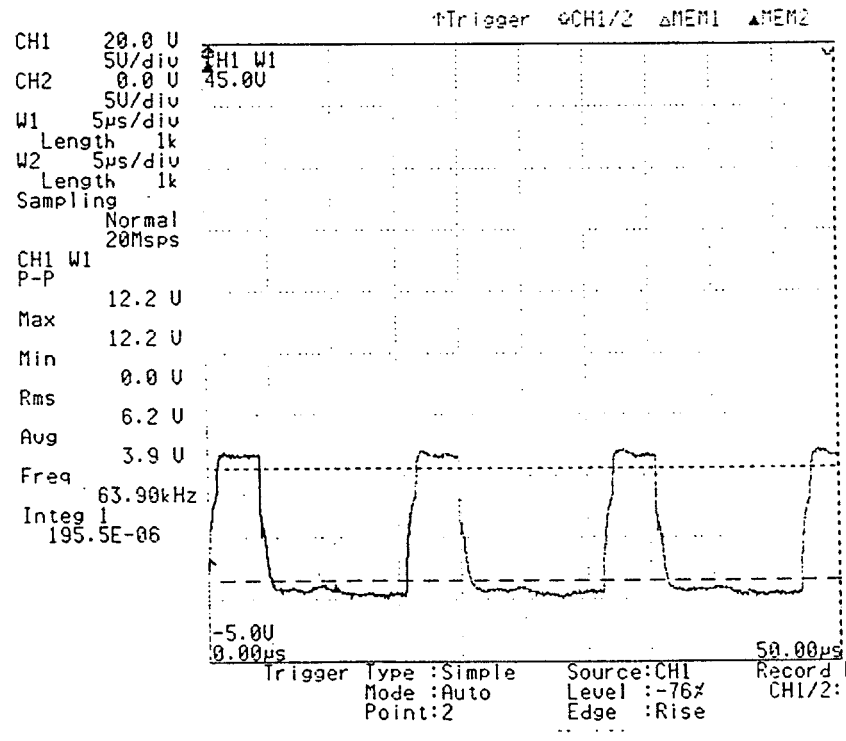

↑Trigger ⊕CH1/2 ΔMEM1 ▲MEM2
CH1 80 U
20U/div
CH2 0.0 U
5U/div
W1 5µs/div
Length 1k
W2 5µs/div
Length 1k
Sampling
Normal
20Msps
CH1 W1
P-P
40.8 U
Max
89.6 U
Min
48.8 U
Rms
75.9 U
Avg
73.8 U
Freq
909.1kHz
Integ 1
3.691E-03
CH1 W1
180.0U
-20.0U
0.00µs
50.00µs
Trigger Type :Simple
Mode :Auto
Point:2
Source:CH1
Level :-10%
Edge :Rise
Record Length
CH1/2:1k
SOCKET CRT
9PIN
RED
GND


↑Trigger ⊕CH1/2 ΔMEM1 ▲MEM2
CH1 80 U
20U/div
CH2 0.0 U
5U/div
W1 5µs/div
Length 1k
W2 5µs/div
Length 1k
Sampling
Normal
20Msps
CH1 W1
P-P
39.2 U
Max
88.0 U
Min
48.8 U
Rms
74.4 U
Avg
72.7 U
Freq
173.9kHz
Integ 1
3.635E-03
CH1 W1
180.0U
-20.0U
0.00µs
50.00µs
Trigger Type :Simple
Mode :Auto
Point:2
Source:CH1
Level :-10%
Edge :Rise
Record Length
CH1/2:1k
SOCKET CRT
12PIN
BLUE
GND



SOCKET CRT
7PIN
GREEN

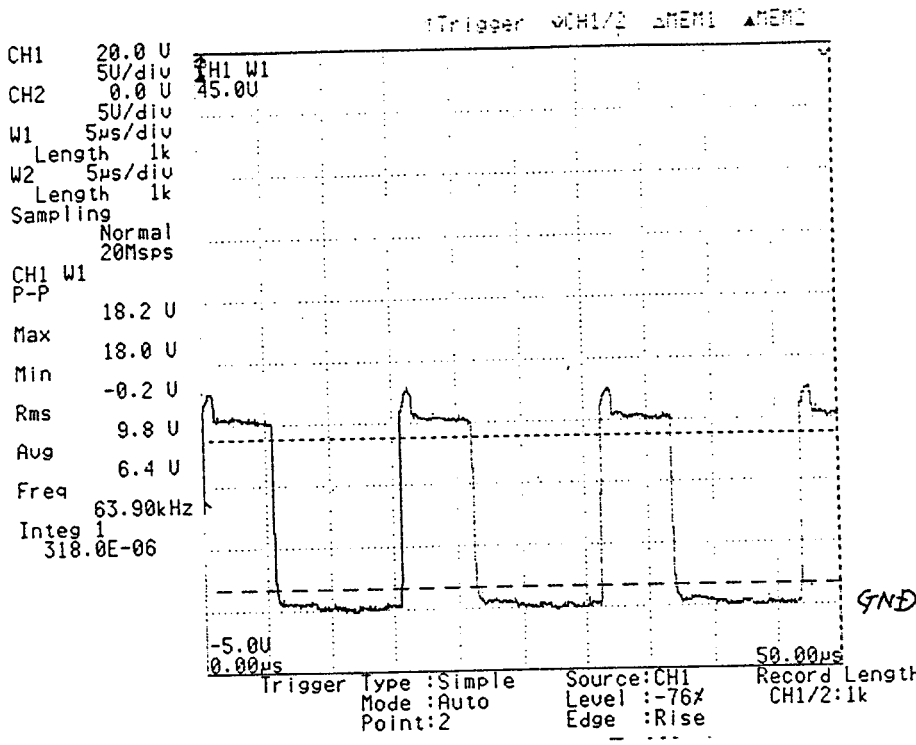
GND



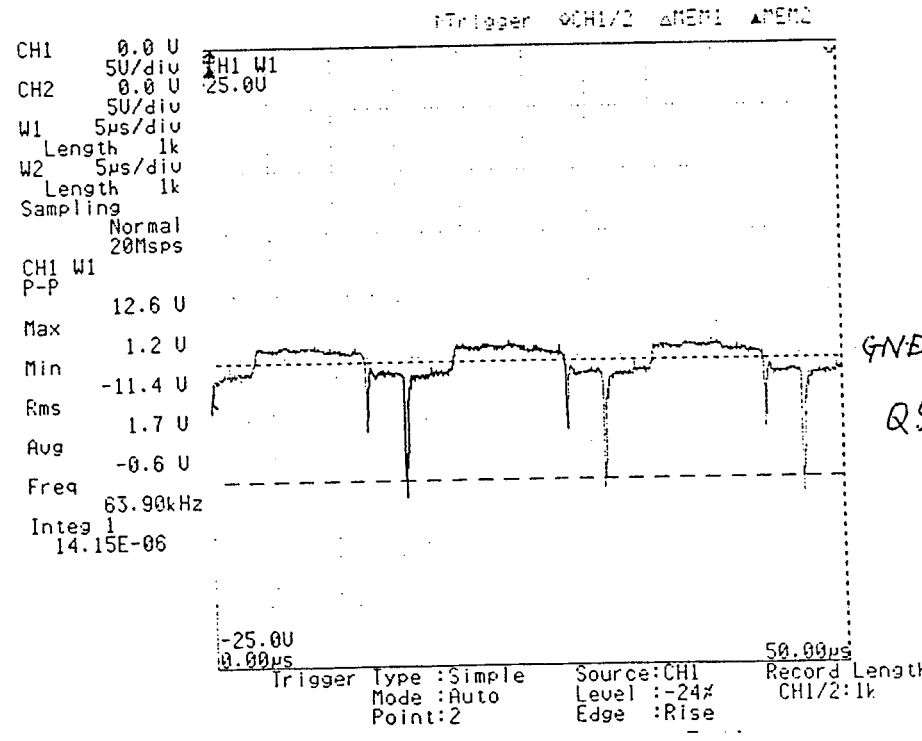
J501 13PIN

+B. GATE

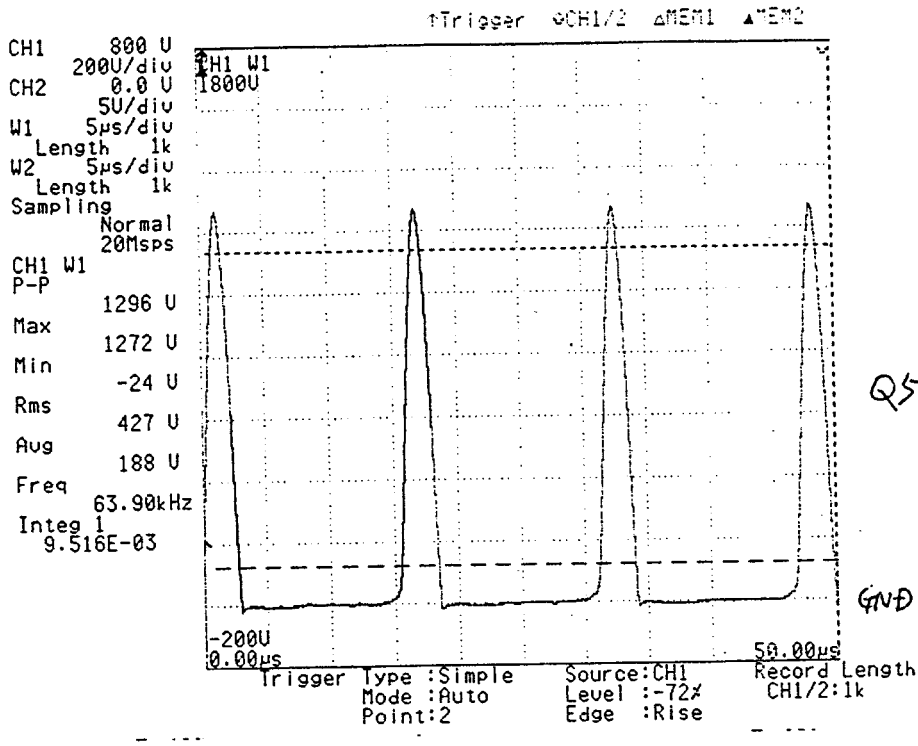
GND



Q502 Drain



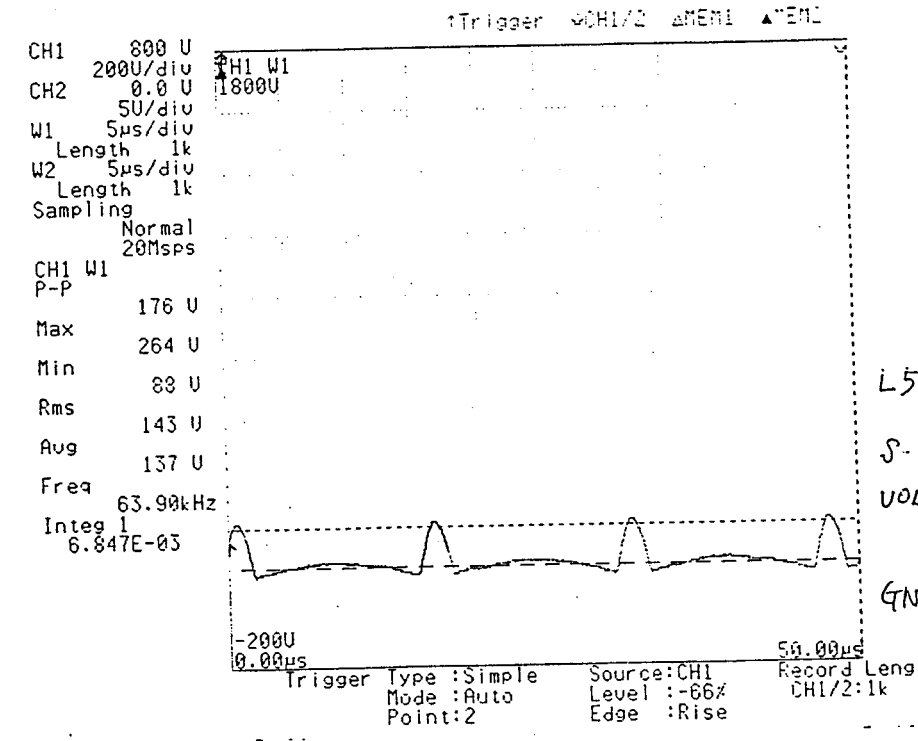
Q503 GATE



Drain

Q503

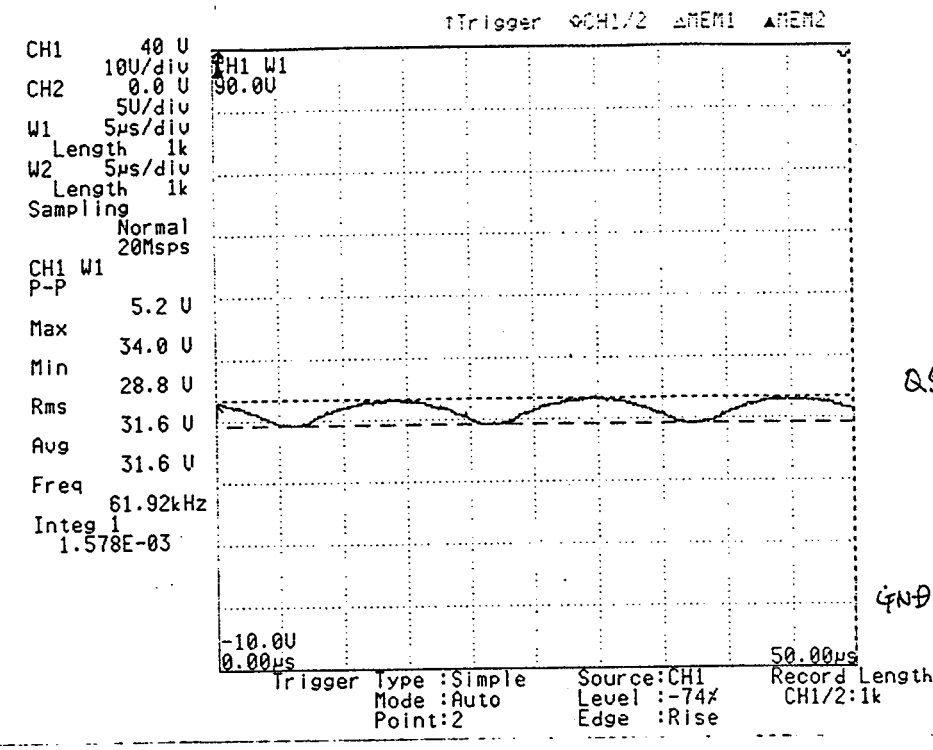
GND



L505/C506

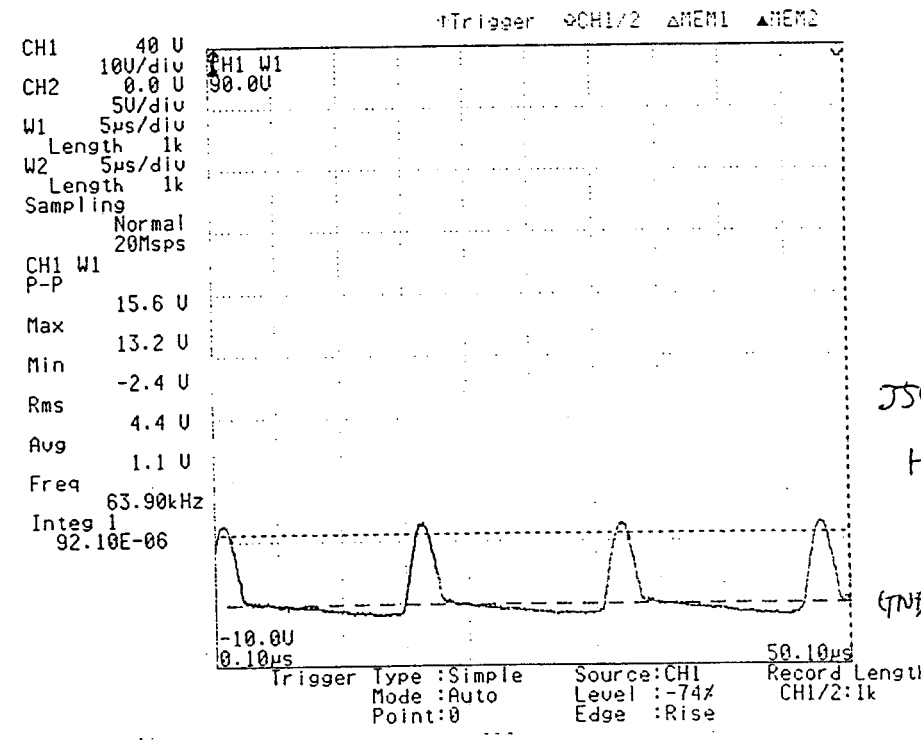
S-CURVE CORRECTION VOLTAGE

GND



Q512 COLLECTOR

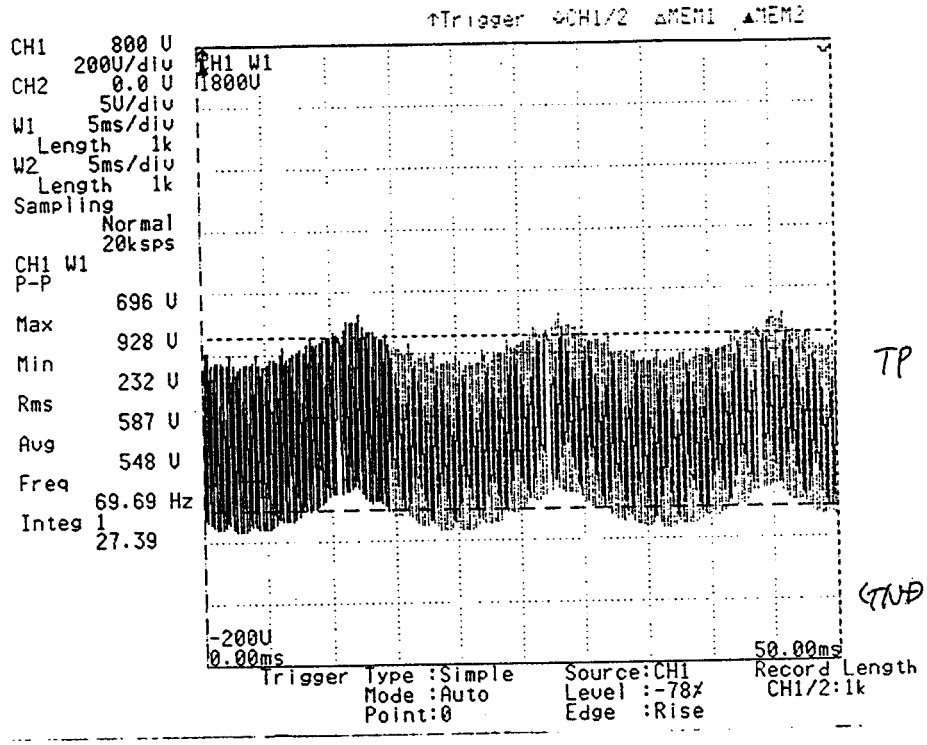
GND



J501 12PIN

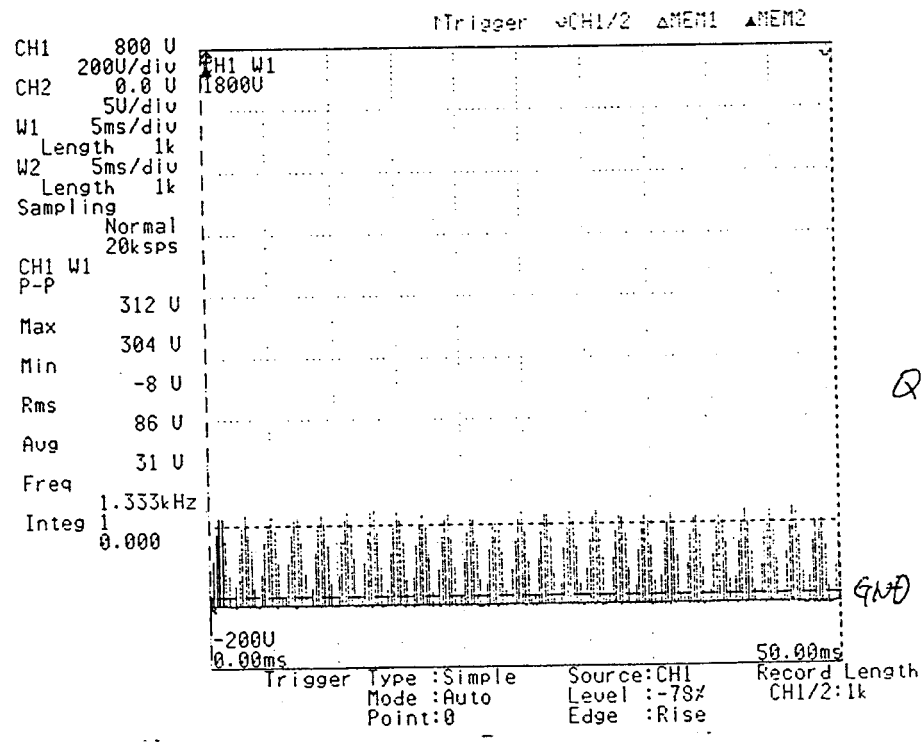
HV- F/B

GND



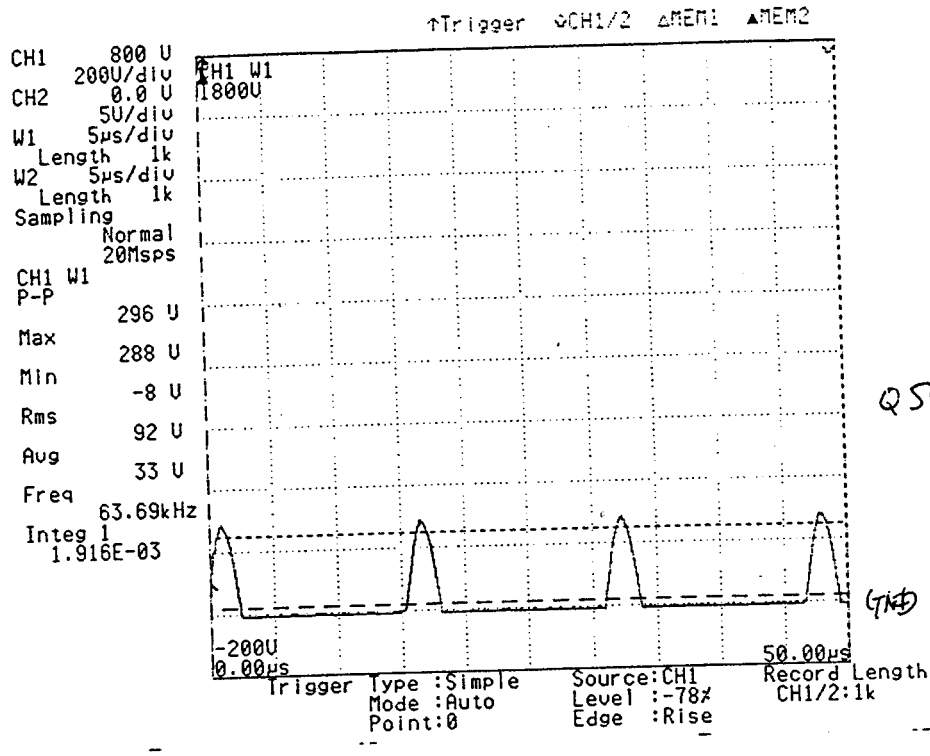
TP DBF

GND

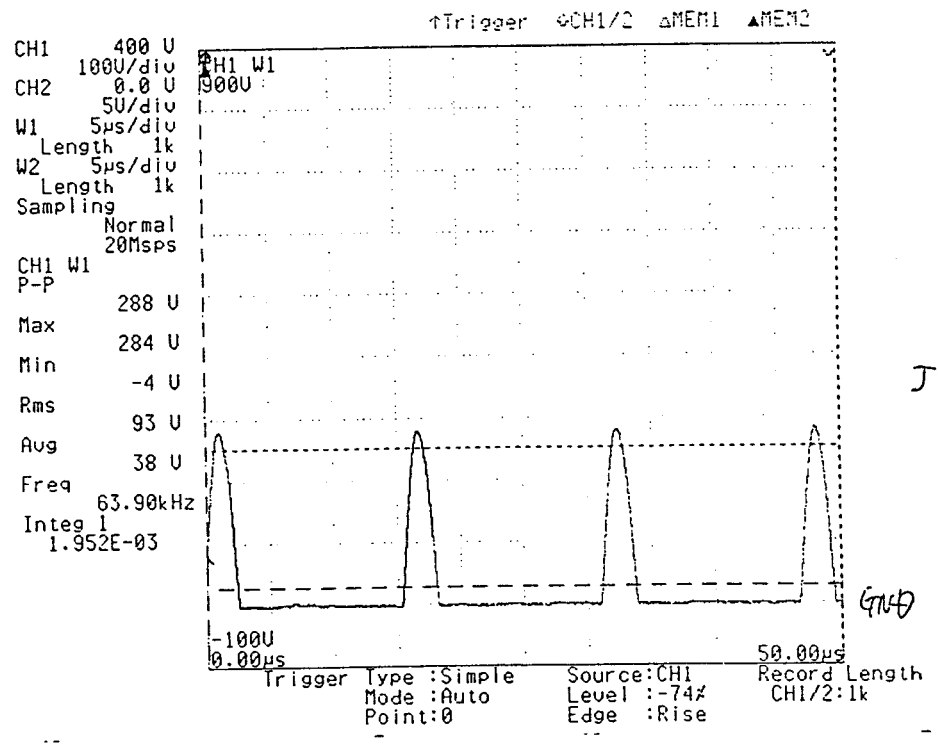


Q505 Source

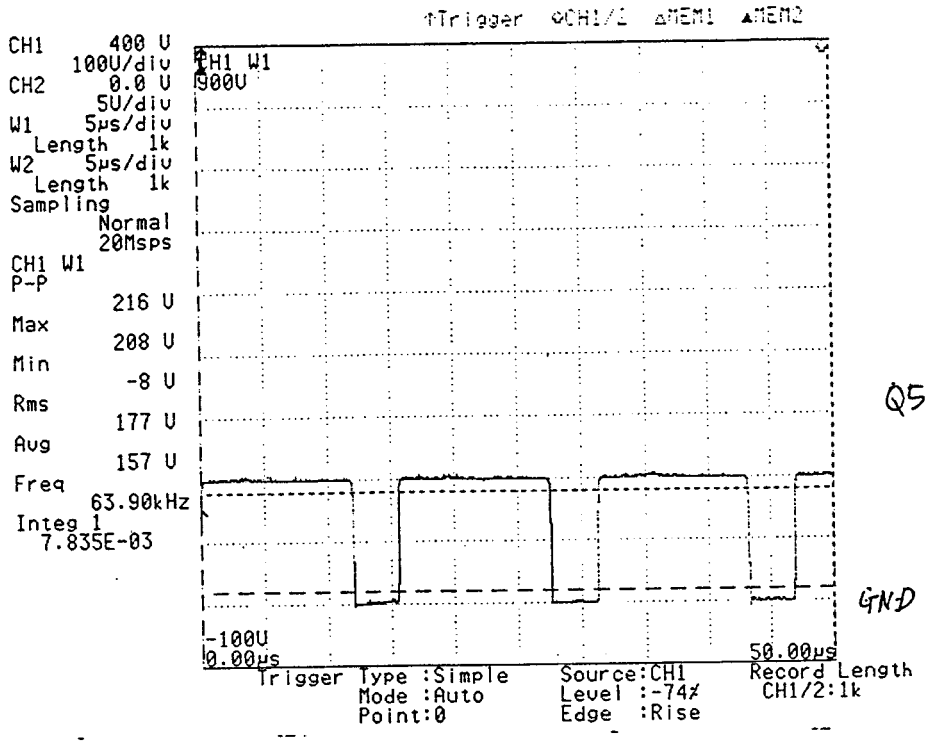
GND



Q505 Source

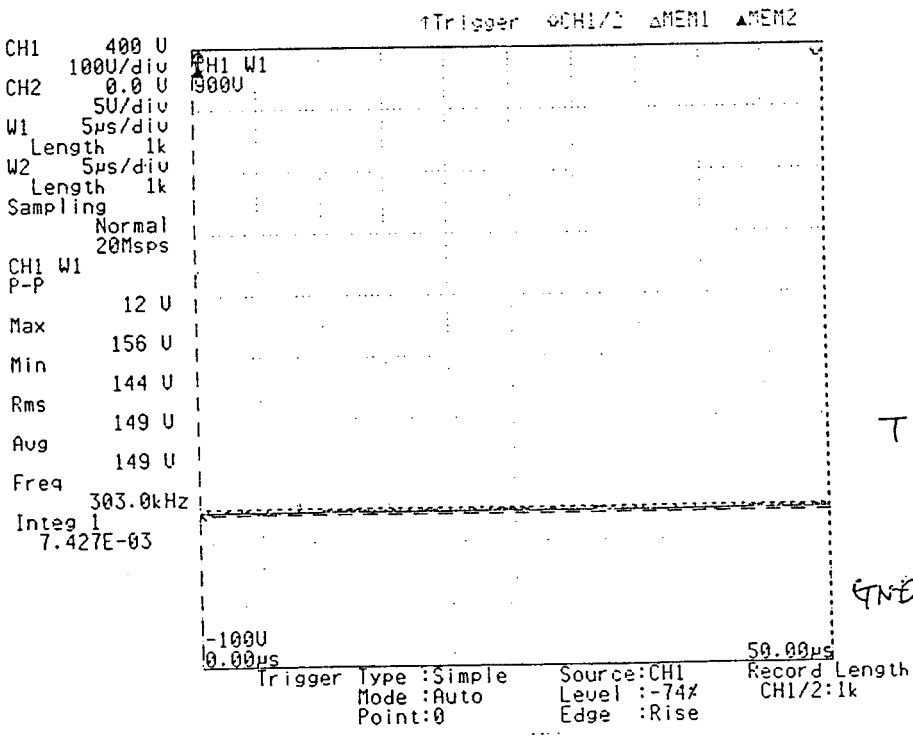


J519 3 PIN



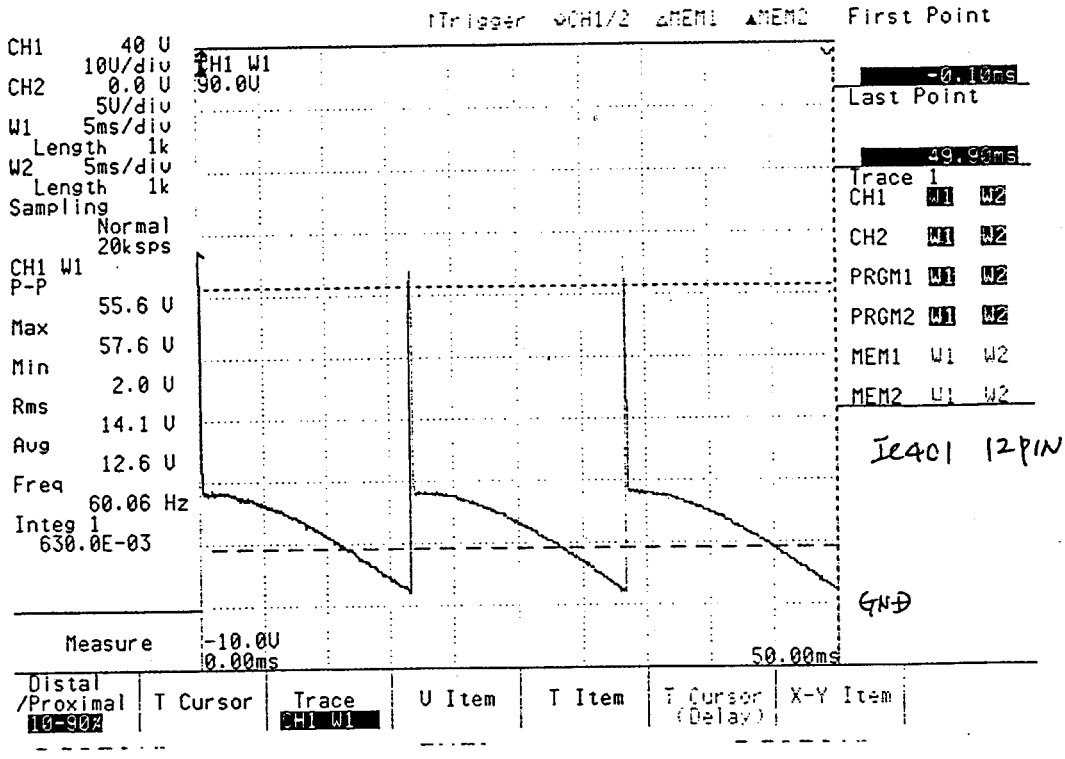
Q534 D RAIN

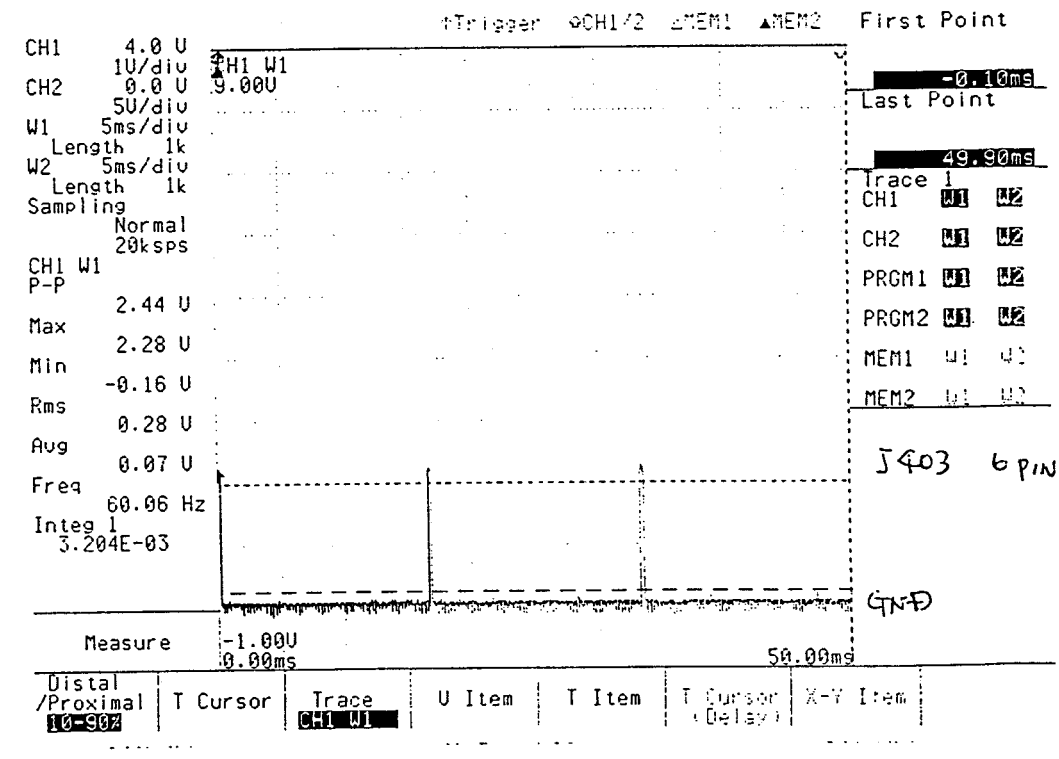
GND

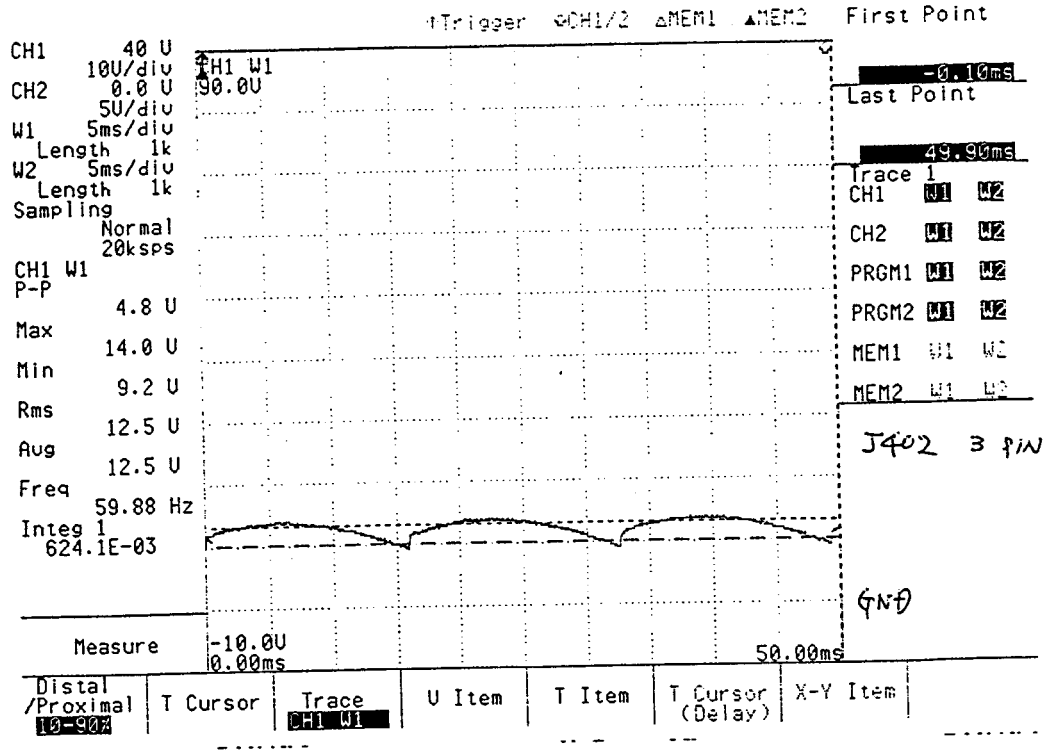


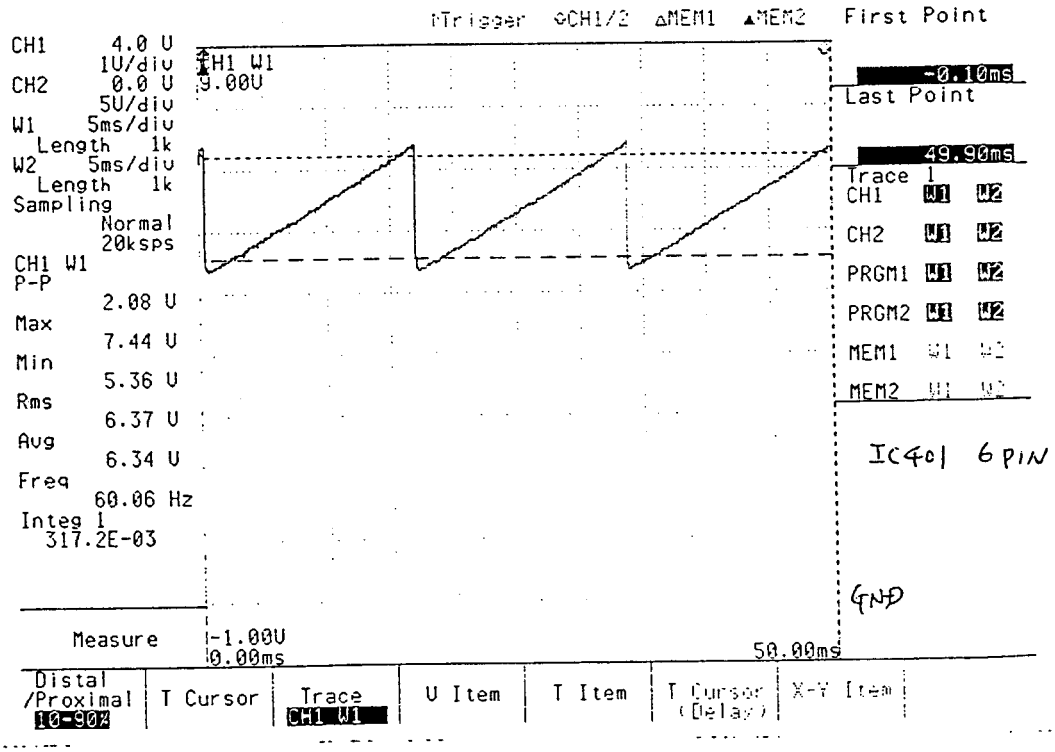
T502 9pin

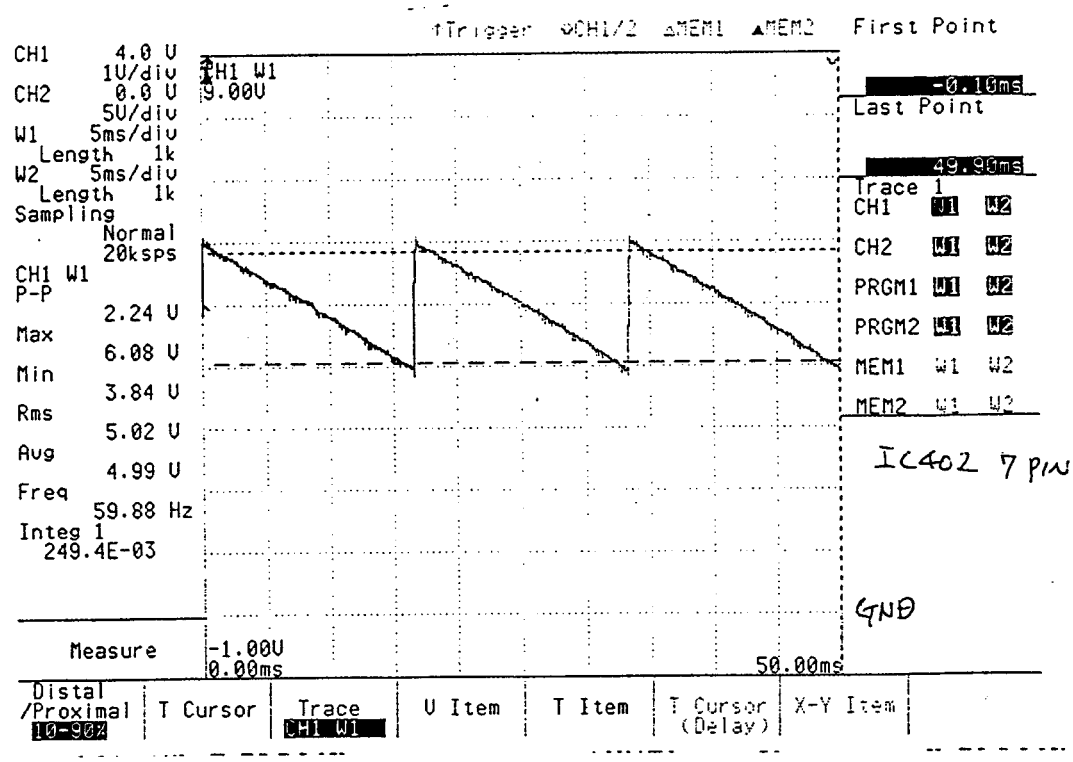
GND

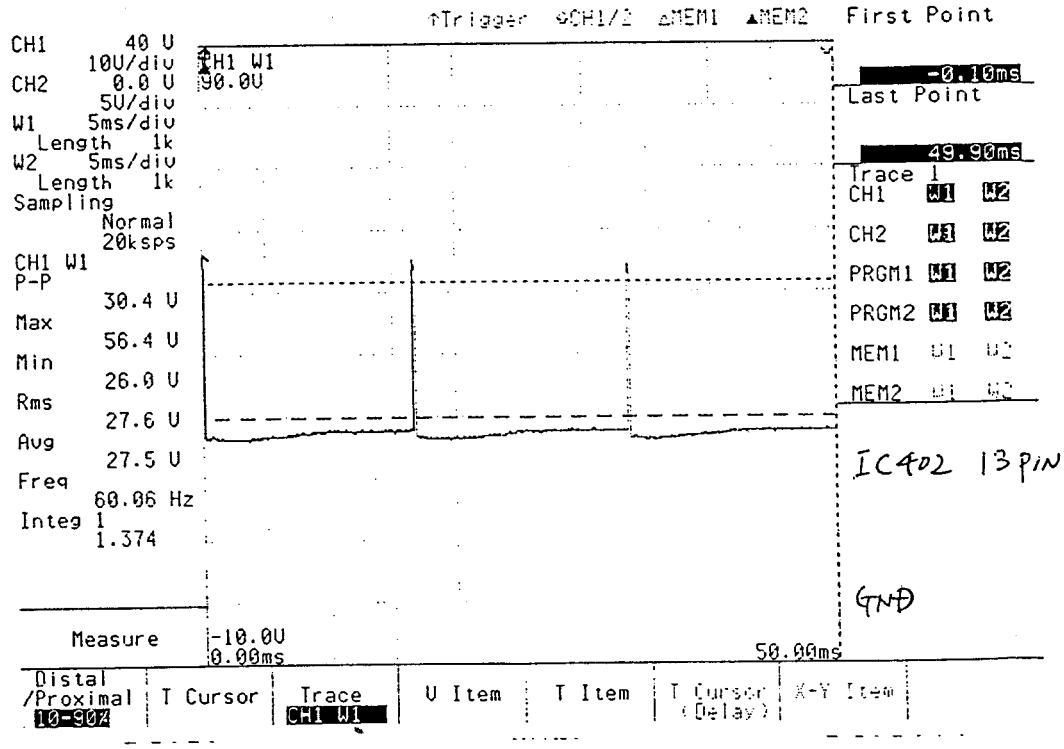

↑Trigger ⊕CH1/2 △MEM1 ▲MEM2 First Point
CH1 40 U
10U/div
CH2 0.0 U
5U/div
W1 5ms/div
Length 1k
W2 5ms/div
Length 1k
Sampling
Normal
20ksps
CH1 W1
P-P
55.6 U
Max
57.6 U
Min
2.0 U
Rms
14.1 U
Avg
12.6 U
Freq
60.06 Hz
Integ 1
630.0E-03
CH1 W1
90.0U
-0.10ms
Last Point
49.90ms
Trace 1
CH1 W1 W2
CH2 W1 W2
PRGM1 W1 W2
PRGM2 W1 W2
MEM1 W1 W2
MEM2 W1 W2
Ie401 12PIN
GND
Measure
-10.0U
0.00ms
50.00ms
Distal /Proximal 10-90%
T Cursor
Trace CH1 W1
U Item
T Item
T Cursor (Delay)
X-Y Item

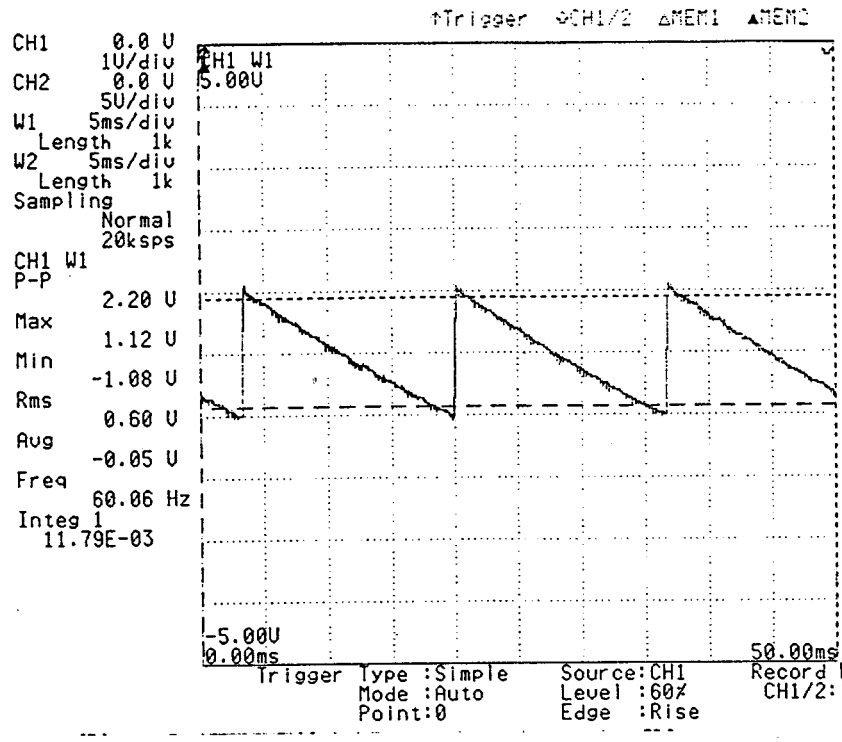

↑Trigger ⊕CH1/2 △MEM1 ▲MEM2 First Point
CH1 4.0 U
1U/div
CH2 0.0 U
5U/div
W1 5ms/div
Length 1k
W2 5ms/div
Length 1k
Sampling
Normal
20ksps
CH1 W1
P-P
2.44 U
Max
2.28 U
Min
-0.16 U
Rms
0.28 U
Avg
0.07 U
Freq
60.06 Hz
Integ 1
3.204E-03
CH1 W1
9.00U
-0.10ms
Last Point
49.90ms
Trace 1
CH1 W1 W2
CH2 W1 W2
PRGM1 W1 W2
PRGM2 W1 W2
MEM1
MEM2
J403 6PIN TD
GND
Measure
-1.00U
0.00ms
50.00ms
Distal /Proximal 10-90%
T Cursor
Trace CH1 W1
U Item
T Item
T Cursor (Delay)
X-Y Item


↑Trigger ⊕CH1/2 ΔMEM1 ▲MEM2 First Point
CH1 40 U
10U/div
CH2 0.0 U
5U/div
W1 5ms/div
Length 1k
W2 5ms/div
Length 1k
Sampling
Normal
20ksps
CH1 W1
P-P
4.8 U
Max
14.0 U
Min
9.2 U
Rms
12.5 U
Avg
12.5 U
Freq
59.88 Hz
Integ 1
624.1E-03
CH1 W1
90.0U
-0.10ms
Last Point
49.90ms
Trace 1
CH1 W1 W2
CH2 W1 W2
PRGM1 W1 W2
PRGM2 W1 W2
MEM1 W1 W2
MEM2 W1 W2
J402 3 pin
GND
Measure
-10.0U
0.00ms
50.00ms
Distal /Proximal 10-90%
T Cursor
Trace CH1 W1
U Item
T Item
T Cursor (Delay)
X-Y Item


↑Trigger ⊕CH1/2 ΔMEM1 ▲MEM2 First Point
CH1 4.0 U
1U/div
CH2 0.0 U
5U/div
W1 5ms/div
Length 1k
W2 5ms/div
Length 1k
Sampling
Normal
20ksps
CH1 W1
P-P
2.08 U
Max
7.44 U
Min
5.36 U
Rms
6.37 U
Avg
6.34 U
Freq
60.06 Hz
Integ 1
317.2E-03
CH1 W1
9.00U
-0.10ms
Last Point
49.90ms
Trace 1
CH1 W1 W2
CH2 W1 W2
PRGM1 W1 W2
PRGM2 W1 W2
MEM1 W1 W2
MEM2 W1 W2
IC401 6 pin
GND
Measure
-1.00U
0.00ms
50.00ms
Distal /Proximal 10-90%
T Cursor
Trace CH1 W1
U Item
T Item
T Cursor (Delay)
X-Y Item


↑Trigger ⊕CH1/2 △MEM1 ▲MEM2 First Point
CH1 4.0 V
1V/div
CH2 0.0 V
5V/div
W1 5ms/div
Length 1k
W2 5ms/div
Length 1k
Sampling
Normal
20ksps
CH1 W1
P-P
2.24 V
Max
6.08 V
Min
3.84 V
Rms
5.02 V
Avg
4.99 V
Freq
59.88 Hz
Integ 1
249.4E-03
CH1 W1
9.00V
-0.10ms
Last Point
49.90ms
Trace 1
CH1 W1 W2
CH2 W1 W2
PRGM1 W1 W2
PRGM2 W1 W2
MEM1 W1 W2
MEM2 W1 W2
IC402 7 PIN
GND
Measure
-1.00V
0.00ms
50.00ms
Distal /Proximal 10-90%
T Cursor
Trace CH1 W1
V Item
T Item
T Cursor (Delay)
X-Y Item

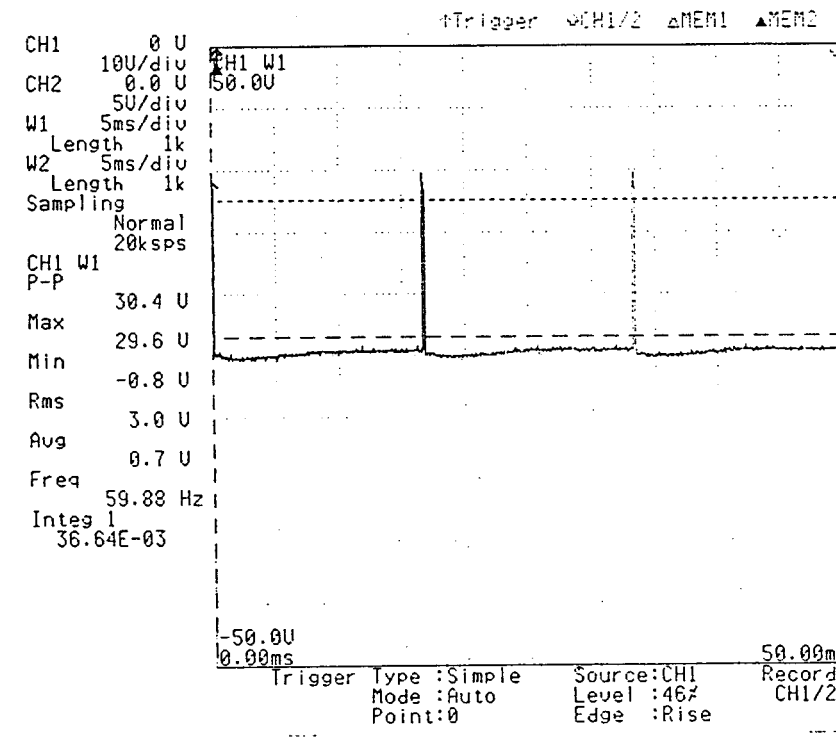

↑Trigger ⊕CH1/2 △MEM1 ▲MEM2 First Point
CH1 40 V
10V/div
CH2 0.0 V
5V/div
W1 5ms/div
Length 1k
W2 5ms/div
Length 1k
Sampling
Normal
20ksps
CH1 W1
P-P
30.4 V
Max
56.4 V
Min
26.0 V
Rms
27.6 V
Avg
27.5 V
Freq
60.06 Hz
Integ 1
1.374
CH1 W1
90.0V
-0.10ms
Last Point
49.90ms
Trace 1
CH1 W1 W2
CH2 W1 W2
PRGM1 W1 W2
PRGM2 W1 W2
MEM1 W1 W2
MEM2 W1 W2
IC402 13 PIN
GND
Measure
-10.0V
0.00ms
50.00ms
Distal /Proximal 10-90%
T Cursor
Trace CH1 W1
V Item
T Item
T Cursor (Delay)
X-Y Item



GND

J401 5PIN

V-SAW.



GND

V-RT

J401 4PIN

RNO DH5221L2

RECOMMENDED SERVICE PARTS

MODEL NO. FFY7705SKTKTL

ITEM	SYMBOL NO.	DESCRIPTION / SPECIFICATION	PART NO.
0481	VR506	VR-SEMIFIXED 1/2W B-10K	RX129C50801
0482	IC201	IC MPC319C/LM319D	RX266P74601
0483	Q 203	TRANSISTOR 2SA781	RX270P52401
0484	D 512	DIODE RG4A	RX274P56201

RECOMMENDED SERVICE PARTS

MODEL NO. FFY7705SKTKTL

ITEM	SYMBOL NO.	DESCRIPTION / SPECIFICATION	PART NO.
0465	D 528	DIODE 1SS83	QX264P36701
0466	D 6B1	DIODE 1SS83	QX264P36701
0467	D 6B2	DIODE 1SS83	QX264P36701
0468	D 6B3	DIODE 1SS83	QX264P36701
0469	D 6B4	DIODE 1SS83	QX264P36701
0470	D 6G1	DIODE 1SS83	QX264P36701
0471	D 6G2	DIODE 1SS83	QX264P36701
0472	D 6G3	DIODE 1SS83	QX264P36701
0473	D 6G4	DIODE 1SS83	QX264P36701
0474	D 6R1	DIODE 1SS83	QX264P36701
0475	D 6R2	DIODE 1SS83	QX264P36701
0476	D 6R3	DIODE 1SS83	QX264P36701
0477	D 6R4	DIODE 1SS83	QX264P36701
0478	D 957	DIODE 1SS83	QX264P36701
0479	VR504	VR-SEMIFIXED 1/2W B-500	RX129C50704
0480	VR506	VR-SEMIFIXED 1/2W B-1K	RX129C50705

RECOMMENDED SERVICE PARTS

MODEL NO. FFY7705SKTKTL

ITEM	SYMBOL NO.	DESCRIPTION / SPECIFICATION	PART NO.
0449	D 540	DIODE 1S2076A/1S2471	QX264P04508
0450	D 546	DIODE 1S2076A/1S2471	QX264P04508
0451	D 547	DIODE 1S2076A/1S2471	QX264P04508
0452	D 548	DIODE 1S2076A/1S2471	QX264P04508
0453	D 549	DIODE 1S2076A/1S2471	QX264P04508
0454	D 550	DIODE 1S2076A/1S2471	QX264P04508
0455	D 957	DIODE 1S2076A/1S2471	QX264P04508
0456	D 964	DIODE 1S2076A/1S2471	QX264P04508
0457	D 966	DIODE 1S2076A/1S2471	QX264P04508
0458	D 2B0	DIODE 1SS83	QX264P36701
0459	D 2B1	DIODE 1SS83	QX264P36701
0460	D 2G0	DIODE 1SS83	QX264P36701
0461	D 2G1	DIODE 1SS83	QX264P36701
0462	D 2R0	DIODE 1SS83	QX264P36701
0463	D 2R1	DIODE 1SS83	QX264P36701
0464	D 527	DIODE 1SS83	QX264P36701

RECOMMENDED SERVICE PARTS

MODEL NO. FFY7705SKTKTL

ITEM	SYMBOL NO.	DESCRIPTION / SPECIFICATION	PART NO.
0433	D 404	DIODE 1S2076A/1S2471	QX264P04508
0434	D 405	DIODE 1S2076A/1S2471	QX264P04508
0435	D 507	DIODE 1S2076A/1S2471	QX264P04508
0436	D 513	DIODE 1S2076A/1S2471	QX264P04508
0437	D 514	DIODE 1S2076A/1S2471	QX264P04508
0438	D 523	DIODE 1S2076A/1S2471	QX264P04508
0439	D 529	DIODE 1S2076A/1S2471	QX264P04508
0440	D 530	DIODE 1S2076A/1S2471	QX264P04508
0441	D 531	DIODE 1S2076A/1S2471	QX264P04508
0442	D 532	DIODE 1S2076A/1S2471	QX264P04508
0443	D 534	DIODE 1S2076A/1S2471	QX264P04508
0444	D 535	DIODE 1S2076A/1S2471	QX264P04508
0445	D 536	DIODE 1S2076A/1S2471	QX264P04508
0446	D 537	DIODE 1S2076A/1S2471	QX264P04508
0447	D 538	DIODE 1S2076A/1S2471	QX264P04508
0448	D 539	DIODE 1S2076A/1S2471	QX264P04508

RECOMMENDED SERVICE PARTS

MODEL NO. FFY7705SKTKTL

ITEM	SYMBOL NO.	DESCRIPTION / SPECIFICATION	PART NO.
0417	R 401	R-FUSE 1/4W 47-J	QX103P37009
0418	R 6BD	R-FUSE 1/4W 47-J	QX103P37009
0419	R 6BG	R-FUSE 1/4W 47-J	QX103P37009
0420	R 6GD	R-FUSE 1/4W 47-J	QX103P37009
0421	R 6GG	R-FUSE 1/4W 47-J	QX103P37009
0422	R 6RD	R-FUSE 1/4W 47-J	QX103P37009
0423	R 6RG	R-FUSE 1/4W 47-J	QX103P37009
0424	R 568	R-FUSE 1/2W 1.0K-J 102 RNF-	QX103P39205
0425	R 592	R-FUSE 1/2W 1.0K-J 102 RNF-	QX103P39205
0426	R 406	R-FUSE 1/2W 1.2-J 1R2 RNF-H	QX103P39801
0427	R 657	R-FUSE 1/2W 1.2-J 1R2 RNF-H	QX103P39801
0428	R 956	R-FUSE 1/2W 1.2-J 1R2 RNF-H	QX103P39801
0429	R 963	R-FUSE 1/2W 1.2-J 1R2 RNF-H	QX103P39801
0430	R 557	R-FUSE 1/2W 1.2-J 1R2 RNF-H	QX103P39801
0431	SW201	VR-CHANNEL-PLESETTER BAND-SW 1-2	QX129P00709
0432	D 403	DIODE 1S2076A/1S2471	QX264P04508

RECOMMENDED SERVICE PARTS

MODEL NO. FFY7705SKTKTL

ITEM	SYMBOL NO.	DESCRIPTION / SPECIFICATION	PART NO.
0401	SW106	TACT-SW SKHRPA	CP439P01102
0402	SW107	TACT-SW SKHRPA	CP439P01102
0403	SW108	TACT-SW SKHRPA	CP439P01102
0404	SW109	TACT-SW SKHRPA	CP439P01102
0405	SW101	TACT-SW EVQQEJ06K	CP439P01302
0406	SW102	TACT-SW EVQQEJ06K	CP439P01302
0407	SW103	TACT-SW EVQQEJ06K	CP439P01302
0408	SW104	TACT-SW EVQQEJ06K	CP439P01302
0409	SW110	TACT-SW EVQQEJ06K	CP439P01302
0410		CUSHION (4PCS)	CP803A04601
0411		ASSY PCB MAIN FFY7705	CT920A09901
0412		ASSY PCB CONT FFY7705	CT920B25601
0413		ASSY PCB VIDEO FFY7705	CT920B25701
0414		ASSY PCB VERT FFY7705	CT920B25801
0415		ASSY PCB SUB1 FFY7705	CT920C06801
0416		ASSY PCB SUB2 FFY7705	CT920C06901

RECOMMENDED SERVICE PARTS

MODEL NO. FFY7705SKTKTL

ITEM	SYMBOL NO.	DESCRIPTION / SPECIFICATION	PART NO.
0385	L 2B2	BEAD-FERRITE FBR07VB850	CP410P01203
0386	L 2G1	BEAD-FERRITE FBR07VB850	CP410P01203
0387	L 2G2	BEAD-FERRITE FBR07VB850	CP410P01203
0388	L 2R1	BEAD-FERRITE FBR07VB850	CP410P01203
0389	L 2R2	BEAD-FERRITE FBR07VB850	CP410P01203
0390	L 200	BEAD-FERRITE FBR07VB850	CP410P01203
0391	L 6B2	BEAD-FERRITE FBR07VB850	CP410P01203
0392	L 6G2	BEAD-FERRITE FBR07VB850	CP410P01203
0393	L 6R2	BEAD-FERRITE FBR07VB850	CP410P01203
0394	L 2B2	BEAD-FERRITE FBR07UA850	CP410P01204
0395	L 2G2	BEAD-FERRITE FBR07UA850	CP410P01204
0396	L 2R2	BEAD-FERRITE FBR07UA850	CP410P01204
0397	SW501	SW-SLIDE ESD11V130	CP431P01501
0398	SW502	SW-SLIDE SSSF112-P09N-1	CP431P01601
0399	SW901	SW-PUSH SDDLD1-C-D-1	CP432P00901
0400	SW105	TACT-SW SKHRPA	CP439P01102

RECOMMENDED SERVICE PARTS

MODEL NO. FFY7705SKTKTL

ITEM	SYMBOL NO.	DESCRIPTION / SPECIFICATION	PART NO.
0369	L 901	LINE-FILTER SS28V-R25080	CP351P03101
0370		COIL-DEGAUSSING FFY7705K	CP409C00801
0371	L 101	FERRITE-CHIP CB7O-453215	CP41OP00201
0372	L 102	FERRITE-CHIP CB7O-453215	CP41OP00201
0373	L 103	FERRITE-CHIP CB7O-453215	CP41OP00201
0374	L 104	FERRITE-CHIP CB7O-453215	CP41OP00201
0375	L 105	FERRITE-CHIP CB7O-453215	CP41OP00201
0376	L 106	FERRITE-CHIP CB7O-453215	CP41OP00201
0377	L 501	BEAD-FERRITE LFW7A-M3R2	CP41OP01001
0378	L 506	BEAD-FERRITE LFW7A-M3R2	CP41OP01001
0379	L 511	BEAD-FERRITE LFW7A-M3R2	CP41OP01001
0380	L 517	BEAD-FERRITE LFW7A-M3R2	CP41OP01001
0381	L 902	BEAD-FERRITE LFW7A-M3R2	CP41OP01001
0382	L 200	BEAD-FERRITE FBRO7HA85O	CP41OP01201
0383	L 513	BEAD-FERRITE FBRO7HA85O	CP41OP01201
0384	L 2B1	BEAD-FERRITE FBRO7VB85O	CP41OP01203

RECOMMENDED SERVICE PARTS

MODEL NO. FFY7705SKTKTL

ITEM	SYMBOL NO.	DESCRIPTION / SPECIFICATION	PART NO.
0353	L 502	COIL-CHOKE 3MH	CP321P07001
0354	L 509	COIL-CHOKE 10MH	CP321P07301
0355	L 510	COIL-CHOKE 6307-1R5102	CP321P07701
0356	L 512	COIL-CHOKE 6307-1R5102	CP321P07701
0357	L 6B0	COIL-PEAKING 0.56MH-K R56	CP325P02008
0358	L 6G0	COIL-PEAKING 0.56MH-K R56	CP325P02008
0359	L 6R0	COIL-PEAKING 0.56MH-K R56	CP325P02008
0360	L 6B0	COIL-PEAKING 0.68MH-K	CP325P02009
0361	L 6R0	COIL-PEAKING 0.68MH-K	CP325P02009
0362	L 6B1	COIL PEAKING 3.3MH-K	CP325P02107
0363	L 6G1	COIL PEAKING 3.3MH-K	CP325P02107
0364	L 6R1	COIL PEAKING 3.3MH-K	CP325P02107
0365	L 505	COIL-H-LIN LME016 21.5T	CP333P02601
0366	T 502	FBT TF2075-3	CP334P04301
0367	T 501	TRANS-HORIZ-DRIVE SRW22IS-520V004	CP336P01401
0368	T 901	TRANS-POWER	CP350P05201

RECOMMENDED SERVICE PARTS

MODEL NO. FFY7705SKTKTL

ITEM	SYMBOL NO.	DESCRIPTION / SPECIFICATION	PART NO.
0337	IC904	PHOTO-COUPLER TLP634(D4-GB-LF2)	CP268P00301
0338	F 901	FUSE 218-T4.0A 250V	CP283P00808
0339	F 952	FUSE 251002 2A	CP283P01604
0340	F 951	FUSE 251003 3A	CP283P01606
0341	F 953	FUSE 251003 3A	CP283P01606
0342	F 901	FUSE 215-T4.0AH 250V	CP283P01707
0343	RY901	RELAY G2R-2A-SKVD DC12	CP287P02102
0344	RY501	RELAY G5B-1 DC12	CP287P02201
0345	X 101	CERAMIC-RESONATOR CSA 8.00 MT	CP296P00104
0346	L 504	COIL-CHOKE FL11Z470K-50	CP321P01304
0347	L 401	COILE-CHOKE FL11H101K-50	CP321P01308
0348	L 951	COILE-CHOKE FL11H101K-50	CP321P01308
0349	L 401	COIL-RF 100MH-K 101 50	CP321P03109
0350	L 951	COIL-RF 100MH-K 101 50	CP321P03109
0351	L 701	COIL-RF 1000M-K	CP321P05106
0352	L 508	TRANS-CHOKE SRW2820ED 47MH	CP321P05502

RNO DH5221L2

RECOMMENDED SERVICE PARTS

MODEL NO. FFY7705SKTKTL

ITEM	SYMBOL NO.	DESCRIPTION / SPECIFICATION	PART NO.
0321	D 502	DIODE S2L60	CP264P23101
0322	D 541	DIODE S2L60	CP264P23101
0323	D 503	DIODE RL2Z	CP264P52201
0324	D 511	DIODE RP 1H	CP264P52301
0325	R 646	THERMISTOR NTH5D103JA	CP265P00802
0326	R 632	THERMISTOR NTH5D471KA	CP265P00901
0327	RP901	POSISTOR 903P54E150MR17	CP265P05101
0328	IC702	IC-MOS-CHIP DAC 8840FS	CP266P11202
0329	IC105	IC-DIGITAL SN75188NS	CP266P11701
0330	IC104	IC-DIGITAL SN75189ANS	CP266P11801
0331	IC102	IC-DIGITAL M66312FP	CP266P15301
0332	IC200	IC M52327SP	CP267P06001
0333	IC901	IC MJ2400	CP267P06101
0334	IC902	IC STR-S6707	CP267P06201
0335	IC101	IC-MOS-CHIP MBCU22102A-107	CP267P06301
0336	IC106	IC-MOS-CHIP AT93C56	CP267P14501

RNO DH5221L2

RECOMMENDED SERVICE PARTS

MODEL NO. FFY7705SKTKTL

ITEM	SYMBOL NO.	DESCRIPTION / SPECIFICATION	PART NO.
0305	D 508	DIODE RGP10K-5008	CP264P21801
0306	D 509	DIODE RGP10K-5008	CP264P21801
0307	D 510	DIODE RGP10K-5008	CP264P21801
0308	D 107	DIODE-LED MPY4361F	CP264P22701
0309	D 140	DIODE-LED MPY4361F	CP264P22701
0310	D 141	DIODE-LED MPY4361F	CP264P22701
0311	D 142	DIODE-LED MPY4361F	CP264P22701
0312	D 143	DIODE-LED MPY4361F	CP264P22701
0313	D 144	DIODE-LED MPY4361F	CP264P22701
0314	D 145	DIODE-LED MPY4361F	CP264P22701
0315	D 146	DIODE-LED MPY4361F	CP264P22701
0316	D 147	DIODE-LED MPY4361F	CP264P22701
0317	D 906	DIODE MPG06JG23	CP264P22801
0318	D 951	DIODE RGP30G	CP264P22901
0319	D 952	DIODE RGP30G	CP264P22901
0320	D 504	DIODE-DAMPER EMP-3FU	CP264P23001

RNO DH5221L2

RECOMMENDED SERVICE PARTS

MODEL NO. FFY7705SKTKTL

ITEM	SYMBOL NO.	DESCRIPTION / SPECIFICATION	PART NO.
0289	D 954	DIODE RGP15D	CP264P15001
0290	D 953	DIODE RGP15J-6040	CP264P15101
0291	D 402	DIODE RGP10D	CP264P15401
0292	D 902	DIODE RGP10D	CP264P15401
0293	D 522	DIODE RGP10G	CP264P15501
0294	D 960	DIODE RGP10G	CP264P15501
0295	Q 956	THYRISTOR SF0R3G42	CP264P17203
0296	D 519	DIODE-ZENER HZS5BLL	CP264P17308
0297	D 501	ZENER HZS5CLL	CP264P17309
0298	D 401	DIODE-ZENER HZS6A1L	CP264P18001
0299	D 520	DIODE-ZENER HZS6C1L	CP264P18007
0300	D 904	DIODE-ZENER HZS7C2L	CP264P18107
0301	D 542	DIODE-ZENER HZS11A1L	CP264P18208
0302	D 6B0	DIODE-ZENER HZS24-2L	CP264P18603
0303	D 6G0	DIODE-ZENER HZS24-2L	CP264P18603
0304	D 6R0	DIODE-ZENER HZS24-2L	CP264P18603

RECOMMENDED SERVICE PARTS

MODEL NO. FFY7705SKTKTL

ITEM	SYMBOL NO.	DESCRIPTION / SPECIFICATION	PART NO.
0273	D 701	DIODE-CHIP HSK120TR LLD	CP264P10501
0274	D 703	DIODE-CHIP HSK120TR LLD	CP264P10501
0275	D 704	DIODE-CHIP HSK120TR LLD	CP264P10501
0276	D 705	DIODE-CHIP HSK120TR LLD	CP264P10501
0277	D 706	DIODE-CHIP HSK120TR LLD	CP264P10501
0278	D 707	DIODE-CHIP HSK120TR LLD	CP264P10501
0279	D 708	DIODE-CHIP HSK120TR LLD	CP264P10501
0280	D 709	DIODE-CHIP HSK120TR LLD	CP264P10501
0281	D 710	DIODE-CHIP HSK120TR LLD	CP264P10501
0282	D 712	DIODE-CHIP HSK120TR LLD	CP264P10501
0283	D 713	DIODE-CHIP HSK120TR LLD	CP264P10501
0284	D 714	DIODE-CHIP HSK120TR LLD	CP264P10501
0285	D 715	DIODE-CHIP HSK120TR LLD	CP264P10501
0286	D 720	DIODE-CHIP HSK120TR LLD	CP264P10501
0287	D 955	DIODE EGP30D 20MM	CP264P11501
0288	D 956	DIODE EGP30D 20MM	CP264P11501

RECOMMENDED SERVICE PARTS

MODEL NO. FFY7705SKTKTL

ITEM	SYMBOL NO.	DESCRIPTION / SPECIFICATION	PART NO.
0257	D 131	DIODE-ZENER-CHIP HZK5BTR	CP264P10201
0258	D 132	DIODE-ZENER-CHIP HZK5BTR	CP264P10201
0259	D 133	DIODE-ZENER-CHIP HZK5BTR	CP264P10201
0260	D 134	DIODE-ZENER-CHIP HZK5BTR	CP264P10201
0261	D 135	DIODE-ZENER-CHIP HZK5BTR	CP264P10201
0262	D 136	DIODE-ZENER-CHIP HZK5BTR	CP264P10201
0263	D 137	DIODE-ZENER-CHIP HZK5BTR	CP264P10201
0264	D 702	DIODE-ZENER-CHIP HZK5BTR	CP264P10201
0265	D 717	DIODE-ZENER-CHIP HZK11ATR LLD	CP264P10303
0266	D 101	DIODE-CHIP HSK120TR LLD	CP264P10501
0267	D 102	DIODE-CHIP HSK120TR LLD	CP264P10501
0268	D 103	DIODE-CHIP HSK120TR LLD	CP264P10501
0269	D 104	DIODE-CHIP HSK120TR LLD	CP264P10501
0270	D 105	DIODE-CHIP HSK120TR LLD	CP264P10501
0271	D 106	DIODE-CHIP HSK120TR LLD	CP264P10501
0272	D 149	DIODE-CHIP HSK120TR LLD	CP264P10501

RECOMMENDED SERVICE PARTS

MODEL NO. FFY7705SKTKTL

ITEM	SYMBOL NO.	DESCRIPTION / SPECIFICATION	PART NO.
0241	D 113	DIODE-ZENER-CHIP HZK5BTR	CP264P10201
0242	D 114	DIODE-ZENER-CHIP HZK5BTR	CP264P10201
0243	D 115	DIODE-ZENER-CHIP HZK5BTR	CP264P10201
0244	D 116	DIODE-ZENER-CHIP HZK5BTR	CP264P10201
0245	D 117	DIODE-ZENER-CHIP HZK5BTR	CP264P10201
0246	D 118	DIODE-ZENER-CHIP HZK5BTR	CP264P10201
0247	D 119	DIODE-ZENER-CHIP HZK5BTR	CP264P10201
0248	D 120	DIODE-ZENER-CHIP HZK5BTR	CP264P10201
0249	D 122	DIODE-ZENER-CHIP HZK5BTR	CP264P10201
0250	D 123	DIODE-ZENER-CHIP HZK5BTR	CP264P10201
0251	D 124	DIODE-ZENER-CHIP HZK5BTR	CP264P10201
0252	D 125	DIODE-ZENER-CHIP HZK5BTR	CP264P10201
0253	D 126	DIODE-ZENER-CHIP HZK5BTR	CP264P10201
0254	D 128	DIODE-ZENER-CHIP HZK5BTR	CP264P10201
0255	D 129	DIODE-ZENER-CHIP HZK5BTR	CP264P10201
0256	D 130	DIODE-ZENER-CHIP HZK5BTR	CP264P10201

RECOMMENDED SERVICE PARTS

MODEL NO. FFY7705SKTKTL

ITEM	SYMBOL NO.	DESCRIPTION / SPECIFICATION	PART NO.
0225	D 901	DIODE EU2A/RGP10G	CP264D00601
0226	D 903	DIODE EU2A/RGP10G	CP264D00601
0227	D 515	DIODE RU1P	CP264P01301
0228	D 909	DIODE EG01Y	CP264P02801
0229	D 968	DIODE HZ2B1	CP264P07005
0230	D 967	DIODE HZ3A3	CP264P07103
0231	D 958	DIODE HZ9A1	CP264P07506
0232	D 139	DIODE HZ2B1	CP264P07606
0233	D 524	DIODE HZ33-2	CP264P08800
0234	D 525	DIODE HZ33-2	CP264P08800
0235	D 526	DIODE HZ33-2	CP264P08800
0236	D 108	DIODE-ZENER-CHIP HZK5BTR	CP264P10201
0237	D 109	DIODE-ZENER-CHIP HZK5BTR	CP264P10201
0238	D 110	DIODE-ZENER-CHIP HZK5BTR	CP264P10201
0239	D 111	DIODE-ZENER-CHIP HZK5BTR	CP264P10201
0240	D 112	DIODE-ZENER-CHIP HZK5BTR	CP264P10201

RECOMMENDED SERVICE PARTS

MODEL NO. FFY7705SKTKTL

ITEM	SYMBOL NO.	DESCRIPTION / SPECIFICATION	PART NO.
0209	IC705	IC-CHIP HA17393F	CP263P05201
0210	IC502	IC-LINEAR LM324N	CP263P05801
0211	IC955	IC-REGULATOR AN7912F	CP263P07901
0212	IC401	IC LA7837	CP263P08001
0213	IC952	IC-REGULATOR AN7712F	CP263P08401
0214	IC701	IC LA7860	CP263P08601
0215	IC706	IC M5238AFP	CP263P08701
0216	IC707	IC FA5301NA(SOP)	CP263P08801
0217	IC954	IC M5278D05	CP263P09101
0218	IC708	IC-LINEAR LM324MX	CP263P09301
0219	IC710	IC AN79L05	CP263P09401
0220	IC953	IC-REG AN78L24	CP263P09501
0221	IC951	IC-REGULATOR SE070N	CP263P09601
0222	IC955	IC-REG AN79N12	CP263P09701
0223	D 533	DIODE EU-1Z/RGP10D	CP264D00501
0224	D 544	DIODE EU-1Z/RGP10D	CP264D00501

RECOMMENDED SERVICE PARTS

MODEL NO. FFY7705SKTKTL

ITEM	SYMBOL NO.	DESCRIPTION / SPECIFICATION	PART NO.
0193	Q 513	TRANSISTOR 2SC5044	CP260P23101
0194	Q 901	TRANSISTOR 2SD1640	CP260P23301
0195	Q 952	TRANSISTOR 2SB1095	CP260P24301
0196	Q 713	FET-CHIP 2SK1062	CP260P24601
0197	Q 505	MOS-FET IRF640	CP260P24901
0198	Q 506	MOS-FET IRF640	CP260P24901
0199	Q 507	MOS-FET IRF640	CP260P24901
0200	Q 526	TRANSISTOR 2SC4634	CP260P25001
0201	Q 533	FET FET-2SK301-Q	CP260P50301
0202	Q 201	FET 2SK359-F	CP260P55701
0203	Q 541	TRANSISTOR 2SC3112-B	CP261P02201
0204	IC402	MOS-IC TC4052BP/MC14052BCP	CP263P02003
0205	IC501	IC M5223P(DIP)	CP263P02201
0206	IC703	IC-CHIP NJM2904M	CP263P03201
0207	IC704	IC-CHIP NJM2904M	CP263P03201
0208	IC709	IC-CHIP NJM2904M	CP263P03201

RECOMMENDED SERVICE PARTS

MODEL NO. FFY7705SKTKTL

ITEM	SYMBOL NO.	DESCRIPTION / SPECIFICATION	PART NO.
0177	Q 705	TRANSISTOR 2SD601A	CP260P19701
0178	Q 707	TRANSISTOR 2SD601A	CP260P19701
0179	Q 709	TRANSISTOR 2SD601A	CP260P19701
0180	Q 710	TRANSISTOR 2SD601A	CP260P19701
0181	Q 711	TRANSISTOR 2SD601A	CP260P19701
0182	Q 714	TRANSISTOR 2SD601A	CP260P19701
0183	Q 715	TRANSISTOR 2SD601A	CP260P19701
0184	Q 716	TRANSISTOR 2SD601A	CP260P19701
0185	Q 718	TRANSISTOR 2SD601A	CP260P19701
0186	Q 721	TRANSISTOR 2SD601A	CP260P19701
0187	Q 723	TRANSISTOR 2SD601A	CP260P19701
0188	Q 534	MOS-FET 2SJ307	CP260P20202
0189	Q 502	MOS-FET 2SK940	CP260P21601
0190	Q 523	TRANSISTOR 2SC1473-R	CP260P22301
0191	Q 501	MOS-FET 2SJ133	CP260P22601
0192	Q 503	TRANSISTOR 2SC5044	CP260P23101

RECOMMENDED SERVICE PARTS

MODEL NO. FFY7705SKTKTL

ITEM	SYMBOL NO.	DESCRIPTION / SPECIFICATION	PART NO.
0161	Q 2R0	TRANSISTOR 2SC4367	CP260P17701
0162	Q 6B1	TRANSISTOR 2SC4200	CP260P18301
0163	Q 6G1	TRANSISTOR 2SC4200	CP260P18301
0164	Q 6R1	TRANSISTOR 2SC4200	CP260P18301
0165	Q 514	TRANSISTOR 2SC4632	CP260P18501
0166	Q 526	TRANSISTOR 2SC4632	CP260P18501
0167	Q 527	TRANSISTOR 2SC4632	CP260P18501
0168	Q 524	TRANSISTOR 2SC3811	CP260P19001
0169	Q 525	TRANSISTOR 2SC3811	CP260P19001
0170	Q 703	TRANSISTOR 2SB709A	CP260P19601
0171	Q 706	TRANSISTOR 2SB709A	CP260P19601
0172	Q 708	TRANSISTOR 2SB709A	CP260P19601
0173	Q 712	TRANSISTOR 2SB709A	CP260P19601
0174	Q 701	TRANSISTOR 2SD601A	CP260P19701
0175	Q 702	TRANSISTOR 2SD601A	CP260P19701
0176	Q 704	TRANSISTOR 2SD601A	CP260P19701

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RECOMMENDED SERVICE PARTS

MODEL NO. FFY7705SKTKTL

ITEM	SYMBOL NO.	DESCRIPTION / SPECIFICATION	PART NO.
0145	Q 512	TRANSISTOR 2SD2012	CP260P08601
0146	Q 516	TRANSISTOR 2SD2012	CP260P08601
0147	Q 105	TRANSISTOR-CHIP 2SC2412K-R	CP260P11001
0148	Q 106	TRANSISTOR-CHIP 2SC2412K-R	CP260P11001
0149	Q 511	TRANSISTOR 2SA1015	CP260P13001
0150	Q 515	TRANSISTOR 2SA1015	CP260P13001
0151	Q 519	TRANSISTOR 2SA1015	CP260P13001
0152	Q 520	TRANSISTOR 2SA1015	CP260P13001
0153	Q 529	TRANSISTOR 2SA1015	CP260P13001
0154	Q 538	TRANSISTOR 2SA1015	CP260P13001
0155	Q 953	TRANSISTOR 2SC2240	CP260P13801
0156	Q 955	TRANSISTOR 2SC2240	CP260P13801
0157	Q 404	TRANSISTOR 2SA1408	CP260P14001
0158	Q 403	TRANSISTOR 2SC3621	CP260P14101
0159	Q 2B0	TRANSISTOR 2SC4367	CP260P17701
0160	Q 2G0	TRANSISTOR 2SC4367	CP260P17701

RECOMMENDED SERVICE PARTS

MODEL NO. FFY7705SKTKTL

ITEM	SYMBOL NO.	DESCRIPTION / SPECIFICATION	PART NO.
0129	Q 539	TRANSISTOR 2SC1815 BL GR Y	CP260P05702
0130	Q 954	TRANSISTOR 2SC1815 BL GR Y	CP260P05702
0131	Q 958	TRANSISTOR 2SC1815 BL GR Y	CP260P05702
0132	Q 540	TRANSISTOR 2SC2705-0	CP260P06803
0133	Q 522	TRANSISTOR 2SC2909S	CP260P07001
0134	Q 521	TRANSISTOR 2SA1207S	CP260P07002
0135	Q 202	TRANSISTOR 2SA1207S	CP260P07002
0136	Q 6B0	TRANSISTOR 2SC3953-E,F	CP260P07401
0137	Q 6B2	TRANSISTOR 2SC3953-E,F	CP260P07401
0138	Q 6G0	TRANSISTOR 2SC3953-E,F	CP260P07401
0139	Q 6G2	TRANSISTOR 2SC3953-E,F	CP260P07401
0140	Q 6R0	TRANSISTOR 2SC3953-E,F	CP260P07401
0141	Q 6R2	TRANSISTOR 2SC3953-E,F	CP260P07401
0142	Q 6B3	TRANSISTOR 2SA1538-E,F	CP260P07402
0143	Q 6G3	TRANSISTOR 2SA1538-E,F	CP260P07402
0144	Q 6R3	TRANSISTOR 2SA1538-E,F	CP260P07402

RECOMMENDED SERVICE PARTS

MODEL NO. FFY7705SKTKTL

ITEM	SYMBOL NO.	DESCRIPTION / SPECIFICATION	PART NO.
0113	Q 957	TRANSISTOR 2SA1020	CP260P01201
0114	Q 537	TRANSISTOR 2SA1283	CP260P01701
0115	Q 536	TRANSISTOR 2SC3243	CP260P01901
0116	Q 204	TRANSISTOR 2SC1815 BL GR Y	CP260P05702
0117	Q 402	TRANSISTOR 2SC1815 BL GR Y	CP260P05702
0118	Q 405	TRANSISTOR 2SC1815 BL GR Y	CP260P05702
0119	Q 406	TRANSISTOR 2SC1815 BL GR Y	CP260P05702
0120	Q 407	TRANSISTOR 2SC1815 BL GR Y	CP260P05702
0121	Q 504	TRANSISTOR 2SC1815 BL GR Y	CP260P05702
0122	Q 508	TRANSISTOR 2SC1815 BL GR Y	CP260P05702
0123	Q 509	TRANSISTOR 2SC1815 BL GR Y	CP260P05702
0124	Q 510	TRANSISTOR 2SC1815 BL GR Y	CP260P05702
0125	Q 528	TRANSISTOR 2SC1815 BL GR Y	CP260P05702
0126	Q 530	TRANSISTOR 2SC1815 BL GR Y	CP260P05702
0127	Q 531	TRANSISTOR 2SC1815 BL GR Y	CP260P05702
0128	Q 532	TRANSISTOR 2SC1815 BL GR Y	CP260P05702

RECOMMENDED SERVICE PARTS

MODEL NO. FFY7705SKTKTL

ITEM	SYMBOL NO.	DESCRIPTION / SPECIFICATION	PART NO.
0097	C 528	C-ELECTROLYTIC 04W 50V 22M-M	CP181P03205
0098	C 559	C-ELECTROLYTIC 04W 50V 33M-M	CP181P03206
0099	C 560	C-ELECTROLYTIC 04W 50V 33M-M	CP181P03206
0100	C 502	C-ELECTROLYTIC 04W 50V 220M-M	CP181P03209
0101	C 582	C-ELECTROLYTIC 04W 100V 10M-M	CP181P03406
0102	C 535	C-ELECTROLYTIC 04W 200V 10M-M	CP181P04609
0103	C 536	C-ELECTROLYTIC 04W 200V 220M-M	CP181P04705
0104	C 546	C-ELECTROLYTIC 04W 450V 4.7M-M	CP181P04902
0105	C 554	C-ELECTROLYTIC-NP 04 50V4.7 M-M-NP	CP181P17508
0106	C 905	C-ELECTROLYTIC 400V 560M	CP185P01701
0107	AG2B0	SURGE-ABSORBER DSP-201M	CP252P00102
0108	AG2G0	SURGE-ABSORBER DSP-201M	CP252P00102
0109	AG2R0	SURGE-ABSORBER DSP-201M	CP252P00102
0110	AG600	SURGE-ABSORBER DSP-301N	CP252P00101
0111	AG501	SURGE-ABSORBER AG15PC152FB-K2M	CP252P00502
0112	AG601	SURGE-ABSORBER AG15PC152FB-K2M	CP252P00502

RECOMMENDED SERVICE PARTS

MODEL NO. FFY7705SKTKTL

ITEM	SYMBOL NO.	DESCRIPTION / SPECIFICATION	PART NO.
0081	C 550	C-ELECTROLYTIC 04W 25V 10M-M	CP181P03002
0082	C 552	C-ELECTROLYTIC 04W 25V 10M-M	CP181P03002
0083	C 547	C-ELECTROLYTIC 04W 25V 22M-M	CP181P03003
0084	C 572	C-ELECTROLYTIC 04W 25V 33M-M	CP181P03004
0085	C 573	C-ELECTROLYTIC 04W 25V 33M-M	CP181P03004
0086	C 523	C-ELECTROLYTIC 04W 25V 47M-M	CP181P03005
0087	C 522	C-ELECTROLYTIC 04W 25V 100M-M	CP181P03006
0088	C 548	C-ELECTROLYTIC 04W 25V 100M-M	CP181P03006
0089	C 549	C-ELECTROLYTIC 04W 25V 100M-M	CP181P03006
0090	C 577	C-ELECTROLYTIC 04W 25V 100M-M	CP181P03006
0091	C 537	C-ELECTROLYTIC 04W 50V 1M-M	CP181P03200
0092	C 540	C-ELECTROLYTIC 04W 50V 1M-M	CP181P03200
0093	C 561	C-ELECTROLYTIC 04W 50V 1M-M	CP181P03200
0094	C 532	C-ELECTROLYTIC 04W 50V 3.3M-M	CP181P03202
0095	C 529	C-ELECTROLYTIC 04W 50V 4.7M-M	CP181P03203
0096	C 538	C-ELECTROLYTIC 04W 50V 10M-M	CP181P03204

RECOMMENDED SERVICE PARTS

MODEL NO. FFY7705SKTKTL

ITEM	SYMBOL NO.	DESCRIPTION / SPECIFICATION	PART NO.
0065	R 865	R-CARBON-CHIP 1/10W 2.4K-F	CP103P11801
0066	R 792	R-CARBON-CHIP 1/10W 3.0K-F	CP103P11803
0067	R 809	R-CARBON-CHIP 1/10W 4.3K-F	CP103P11804
0068	R 956	R-FUSE 1/4W 0.22-J RF25S R22	CP109P01705
0069	R 906	R-CEMENT-FUSE 5W 20-K	CP109P13006
0070	VR505	VR-SEMIFIXED 1/5W B-5K	CP127C02108
0071	VR211	VR-SEMIFIXED 1/5W B-100K	CP127C02203
0072	VR701	VR-SEMIFIXED 1/5W B-300	CP127C03103
0073	VR503	VR-SEMIFIXED 1/5W B-3K	CP127C03107
0074	VR502	VR-SEMIFIXED 1/5W B-5K	CP127C03108
0075	VR501	VR-SEMIFIXED 1/5W B-50K	CP127C03202
0076	VR680	VR-SEMIFIXED 1/10W B-20K	CP129C50200
0077	VR660	VR-SEMIFIXED 1/10W B-20K	CP129C50200
0078	VR6R0	VR-SEMIFIXED 1/10W B-20K	CP129C50200
0079	C 558	C-ELECTROLYTIC 04W 25V 4.7M-M	CP181P03001
0080	C 579	C-ELECTROLYTIC 04W 25V 4.7M-M	CP181P03001

RECOMMENDED SERVICE PARTS

MODEL NO. FFY7705SKTKTL

ITEM	SYMBOL NO.	DESCRIPTION / SPECIFICATION	PART NO.
0049	R 745	R-CARBON-CHIP 1/10W 3.3K-F	CP103P11304
0050	R 164	R-CARBON-CHIP 1/10W 4.7K-F	CP103P11306
0051	R 165	R-CARBON-CHIP 1/10W 4.7K-F	CP103P11306
0052	R 857	R-CARBON-CHIP 1/10W 4.7K-F	CP103P11306
0053	R 768	R-CARBON-CHIP 1/10W 5.6K-F	CP103P11307
0054	R 794	R-CARBON-CHIP 1/10W 6.8K-F	CP103P11308
0055	R 810	R-CARBON-CHIP 1/10W 6.8K-F	CP103P11308
0056	R 812	R-CARBON-CHIP 1/10W 18K-F	CP103P11403
0057	R 708	R-CARBON-CHIP 1/10W 22K-F	CP103P11404
0058	R 752	R-CARBON-CHIP 1/10W 33K-F	CP103P11406
0059	R 807	R-CARBON-CHIP 1/10W 47K-F	CP103P11408
0060	R 716	R-CARBON-CHIP 1/10W 100K-F	CP103P11502
0061	R 850	R-CARBON-CHIP 1/10W 100K-F	CP103P11502
0062	R 771	R-CARBON-CHIP 1/10W 120K-F	CP103P11503
0063	R 881	R-CARBON-CHIP 1/10W 330K-F	CP103P11508
0064	R 754	R-CARBON-CHIP 1/10W 9.1K-F	CP103P11701

RECOMMENDED SERVICE PARTS

MODEL NO. FFY7705SKTKTL

ITEM	SYMBOL NO.	DESCRIPTION / SPECIFICATION	PART NO.
0033	R 633	R-METAL-S 1/4W 39K-F 393 RN-H	CP103P06807
0034	R 558	R-METAL-S 1/4W 270K-F 274 RN-H	CP103P07101
0035	R 732	R-CARBON-CHIP 1/10W 22O-F	CP103P11200
0036	R 717	R-CARBON-CHIP 1/10W 27O-F	CP103P11201
0037	R 731	R-CARBON-CHIP 1/10W 27O-F	CP103P11201
0038	R 717	R-CARBON-CHIP 1/10W 1.0K-F	CP103P11208
0039	R 775	R-CARBON-CHIP 1/10W 1.0K-F	CP103P11208
0040	R 808	R-CARBON-CHIP 1/10W 1.0K-F	CP103P11208
0041	R 746	R-CARBON-CHIP 1/10W 1.5K-F	CP103P11300
0042	R 793	R-CARBON-CHIP 1/10W 1.5K-F	CP103P11300
0043	R 713	R-CARBON-CHIP 1/10W 1.8K-F	CP103P11301
0044	R 866	R-CARBON-CHIP 1/10W 1.8K-F	CP103P11301
0045	R 773	R-CARBON-CHIP 1/10W 2.2K-F	CP103P11302
0046	R 774	R-CARBON-CHIP 1/10W 2.2K-F	CP103P11302
0047	R 777	R-CARBON-CHIP 1/10W 2.2K-F	CP103P11302
0048	R 709	R-CARBON-CHIP 1/10W 3.3K-F	CP103P11304

RECOMMENDED SERVICE PARTS

MODEL NO. FFY7705SKTKTL

ITEM	SYMBOL NO.	DESCRIPTION / SPECIFICATION	PART NO.
0017	R 915	R-METAL-S 1/4W 3.6K-F 362 RN-H	CP103P06602
0018	R 415	R-METAL-S 1/4W 3.9K-F 392 RN-H	CP103P06603
0019	R 222	R-METAL-S 1/4W 4.7K-F 472RN-H	CP103P06605
0020	R 418	R-METAL-S 1/4W 5.1K-F 512 RN-H	CP103P06606
0021	R 412	R-METAL-S 1/4W 5.6K-F 562 RN-H	CP103P06607
0022	R 606	R-METAL-S 1/4W 5.6K-F 562 RN-H	CP103P06607
0023	R 602	R-METAL-S 1/4W 6.8K-F 682 RN-H	CP103P06609
0024	R 695	R-METAL-S 1/4W 6.8K-F 682 RN-H	CP103P06609
0025	R 601	R-METAL-S 1/4W 7.5K-F	CP103P06700
0026	R 219	R-METAL-S 1/4W 12K-F 123 RN-H	CP103P06705
0027	R 419	R-METAL-S 1/4W 12K-F 123 RN-H	CP103P06705
0028	R 447	R-METAL-S 1/4W 22K-F 223RN-H	CP103P06801
0029	R 503	R-METAL-S 1/4W 30K-F 303RN-H	CP103P06804
0030	R 645	R-METAL-S 1/4W 30K-F 303RN-H	CP103P06804
0031	R 650	R-METAL-S 1/4W 30K-F 303RN-H	CP103P06804
0032	R 409	R-METAL-S 1/4W 33K-F 333RN-H	CP103P06805

RECOMMENDED SERVICE PARTS

MODEL NO. FFY7705SKTKTL

ITEM	SYMBOL NO.	DESCRIPTION / SPECIFICATION	PART NO.
0001	R 914	R-METAL-S 1/4W 100-F	CP103P06205
0002	R 961	R-METAL-S 1/4W 100-F	CP103P06205
0003	R 220	R-METAL-S 1/4W 120-F 121 RN-H	CP103P06207
0004	R 221	R-METAL-S 1/4W 390-F 391 RN-H	CP103P06309
0005	R 632	R-METAL-S 1/4W 470-F	CP103P06401
0006	R 555	R-METAL-S	CP103P06403
0007	R 420	R-METAL-S 1/4W 1K-F 102 RN-H	CP103P06409
0008	R 921	R-METAL-S 1/4W 1.5K-F 152 RN-H	CP103P06503
0009	R 523	R-METAL-S 1/4W 1.8K-F 182 RN-H	CP103P06505
0010	R 563	R-METAL-S 1/4W 2.2K-F 222 RN-H	CP103P06507
0011	R 413	R-METAL-S 1/4W 2.7K-F 272 RN-H	CP103P06509
0012	R 524	R-METAL-S 1/4W 2.7K-F 272 RN-H	CP103P06509
0013	R 560	R-METAL-S 1/4W 2.7K-F 272 RN-H	CP103P06509
0014	R 910	R-METAL-S 1/4W 2.7K-F 272 RN-H	CP103P06509
0015	R 561	R-METAL-S 1/4W 3.6K-F 362 RN-H	CP103P06602
0016	R 562	R-METAL-S 1/4W 3.6K-F 362 RN-H	CP103P06602

RNO DH5221L2

RECOMMENDED SERVICE PARTS

MODEL NO. FFY7705SKTKL

ITEM	SYMBOL NO.	DESCRIPTION / SPECIFICATION	PART NO.
0001		CABLE CABLE-FA5	CP242B04201
0002		AC-POWER-CORD	CP242C15902
0003		CAP	CP641D02505
0004		CAP VH30	CP641D02506
0005		DOOR ABS VH30	CP702B00502
0006		T/S-STAND-UNIT	CP720B00901
0007		BEZEL-UNIT FFY7705K	CP720B01002
0008		BACK-COVER-UNIT	CP721B01004
0009		PACKING-CASE FFY7705SKTK	CP802C10405
0010		ACCESSORY FFY7705SKTK	CP859C07409
0011	CRT	AF17G9SLBB22-K ITC	0387C01Z

DWG NO

COLOR-BALANCE
PCC-AMP
V-SIZE
V-POSI
H-SIZE
H-POSI

D142 143 144 145 146 147
D142 ~ D147
MPY4361F
5V
D107
R195
1/8W
220

LED ITEM D

TXD
TRD
+12V
D101 +12V
D102
D104
D103
C101 100P
C102 100P
L102 C105 0.01μ
L101
C103 100P
C104 100P
IC105
Q106
D106
D105
R102 100
R101 100
IC104
C108 0.01μ
C107
R179 5V
R180 5.6K
R178 120K
R103 4.7K
C163 1000P
C149 30P
X101
R181 1M
C150 30P
C153 C154 C155 C156 C157 C158 1000P×6

R173
R174
R175
R176
R177
R178
1/8 470Ω

R105 100
R106 100
C110 C111 1000P
R115 1/8W 220
C140
C112 1000P
R107 1/8W 220
R108 220
C113 0.01M

DEGAUSS
CONT LED
BRT LED
CS0
CS1
CS2
H-LIN
R109 100
R110 100
R111 100
R112 100
R113 100
R114 100
IC102
M66312P

CONTRAST
BRIGHTNESS
D140
D141
D140, D141
MPY4361F

R116 47
R117 47
R118 47
C114 100P
C115 100P
C116 100P
D108 D109 D110

R122
R121
R120
R119
4.7K×4
+5V

D114
D113
D112
D111
D110
R127
R128
R129
R130
4.7K×4
C120
C119
C118
C117
1000P×4

(J113)
(J114)
(J112)
(J111)

IC 101
BCM-8L

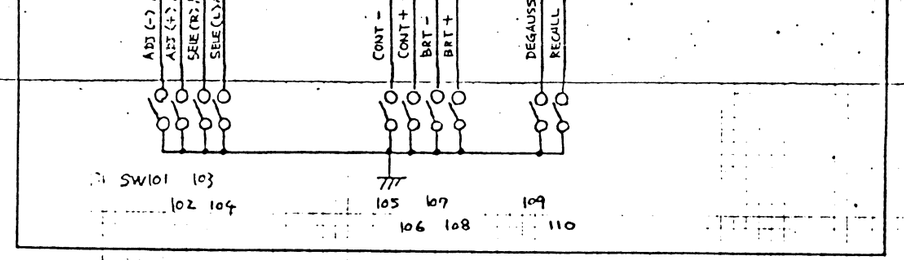
R166 560
R165 +5V
4.7K-F
D139
HZ2B1
C164 500 0.47μ
R164 4.7K-F

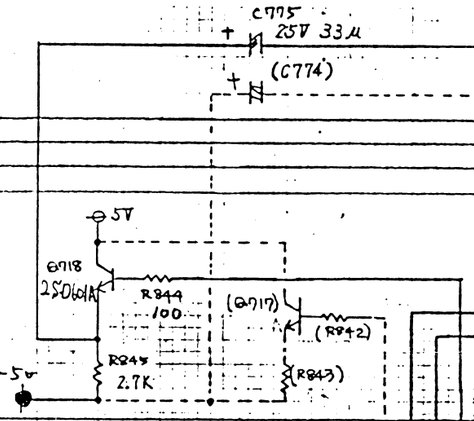
R163 100
R162 100
R161 100
R160 100
R159 100
D133 D134 D135 D136 D137
C137 1000P
C138 1000P
C139 1000P
C140 1000P
C141 1000P
C161

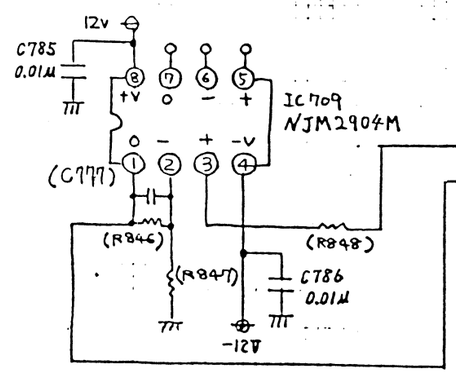
R158 100
R157 100
R156 100
R155 100
D129 D130 D131 D132
C133 C134 C135 C136
R154 100
N.C
R151 1K
D126 D128
C132
R152 100
R150 100
C131 50V 1μ
D125
BT15
R149 100
D123
HZK12B
C130
R148 100
R145 1K
C129
R144 0
D122

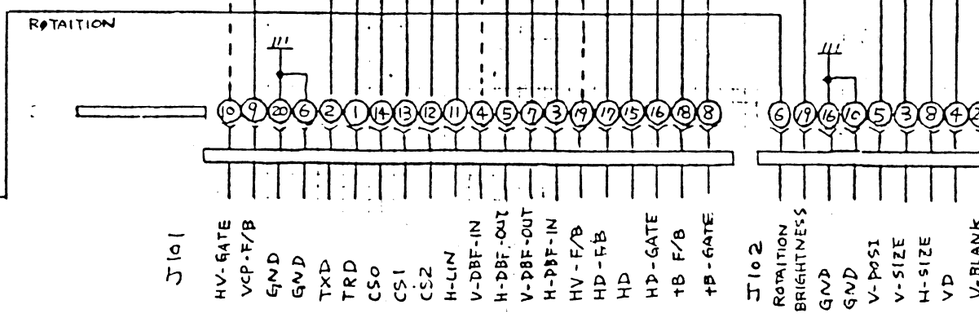
R143
R142
R141
R140 5.6K×4
AT93C56
+5V
C128 25V 100μ
R139
IC106
C127 0.1
C157
C126 1000P
C125 1000P
R135 4.7K
R136 4.7K
R137 100
R138 100
D120
D119
D118
D117
D116
D115
C124
C123
C122
C121

ADJ (-) R123
ADJ (+) R124
SELE (R) R125
SELE (L) R126
CONT - R131
CONT + R132
BRT - R133
BRT + R134
DEGAUSS R137
RECALL









改 定 CHANGE

1 2 3 4 5 6 7 8

G-SYNC
GND
P-MANEG
V-SYNC
H-SYNC
CLAMP
B-GAIN
G-GAIN
R-GAIN
CONTRAST
J103
2 6 1 9 10 3 5 8 7 4
5V
R872 2.7K
R873 12K
R874 2.7K
R875 12K
R829 100K
R823 100K
C767 0.01
C766 10000P
R822 47K
-12V
C769 0.01μ
R821 47K
C765 10000P
12V
R815 10K
R816 4.7K
R817 47K
C760 10000P
C761 0.01μ
R827 100K
+12V
R820 100
IC708 LM324
R818 10K
C763 0.01
R819 33K
C762 10000P
-12V
C759 10000P
R166 560
R165 4.7K-F
+5V
C164 500 0.47μ
D139 HE2B1
R164 4.7K-F
R163 100
R162 100
R161 100
R160 100
R159 100
C160 50V 2700P
C161 25V 47μ
D133 D134 D135 D136 D137
C137 1000P
C138 1000P
C139 1000P
C140 1000P
C141 1000P
(ANALOG GND)
R158 100
R157 100
R156 100
R155 100
(D129) (D130) (D131) (D132)
(J113)
IC 101
BCH-8L
(J114)
(J112)
R154 100
R151 1K
D126 D128
C132 100P
R152 100
R150 100
C131 50V 1μ
D125
R149 100
D123 HZK12B
D124
C130 1000P
R148 100
R145 1K
C129 4.7μ
R146 0
(D122)
(J111)
R143
R142
R141
R140
5.6K x4
+5V
AT93C56
C128 25V 100μ
IC106
R139 100
D114
D113 D112 D111 C120 C119 C118 C117 1000P x4
D120
D118 D117 D116 D115 D119
R127 R128 R129 R130 4.7K x4
C124 C123 C122 C121
C126 1000P
C125 1000P
C127 0.1
C157 1000P
R135 4.7K
R136 4.7K
R137 100
R138 100
C151 1000PF
R193 47K
D148
R871 3.3K
R870 15K
-5V
D718
C781 0.01
+7V 5V
Q723
R727 10K
C800 0.047μ (HF)
(R861) 47K
R729 1K
R730 4.7K
Q701
R726 22
R728 10
R854 1/8W 10
R831 100
R832 1/2W 33
R835 4.7K
Q712
C720
C723 150P
C721 0.01μ
C722 330P CH
C718 0.015 CH
C780 0.01μ
(C719)
R719 0
D701 1K
(R721)
R723 1K
0.068
HZK5B
4.7K
R792 0
(R793)
Q722
R701 C701 1μ
R702 4.7K
R703 C702
R707 4.7K
0.01μ
N.C
LA7860 (DIP)
R706
R708
3.3K
R707 15K
(D719)
-5V
C703
C706 CH
C707 4.7μ
(R710)
R709 3.3K-F
R713
C711 0.001
C712
R714 3.3K
C709 2.2μ
C710 2.2μ
C716
R716 700K
R717 1K-F
L701
C715 1/2W 12
C770 470μ
R884 680
SEG(R) R125
SEG(L) R126
CONT - R131 100
CONT + R132 100
BRT - R133 100
BRT + R134 100
DEGAUSS R137 100
RECALL R138 100

SELE CR
SELE CL
CONT -
CONT +
BRT -
BRT +
DEGAUSS
RECALL

103
102 104
105 107 109
106 108 110

C775 25V 33μ
(C774)
5V
Q718 2SD601A
R844 100
(Q717)
(R842)
R845 2.7K
(R843)
-5V

IC709 NJM2904M
(R847)
C786 0.01M
(R848)
-12V

ROTATION

J101
HV-GATE
VCP-F/B
GND
GND
TXD
TRD
CSO
CS1
CS2
H-LIN
V-DBF-IN
H-DBF-OUT
V-DBF-OUT
H-DBF-IN
HV-F/B
HD-F/B
HD
HD-GATE
+B F/B
+B-GATE

J102
ROTATION
BRIGHTNESS
GND
GND
V-POS1
V-SIZE
H-SIZE
VD
V-BLANK
CTF-COMPLETE
SUSPEND
V-SW 1
V-SW 2
PCC-PHASE-OUT
" AMP-OUT
PHASE-IN
AMP-IN
5V
-12V
12V

5V
R838 100
Q715
C772 33μ
R839 10K
-5V
R840 0
Q716
C773 33μ
R841 10K
-5V

R836 3.3K
R837 3.3K
R739 3.3K
R740 3.3K
D704
R741 3.3K
R742 470
D705
D706
R743 3.3K
R744 470
D707
D708
D713
R735 33
R736 220
C771 0.1

R731 270
R732 220-F
C725 0.01
R862 6.8K
R864 10K
R863 3.3K
R733 470
R734 470
R737 470
R738 470
IC702 DAC8840FS

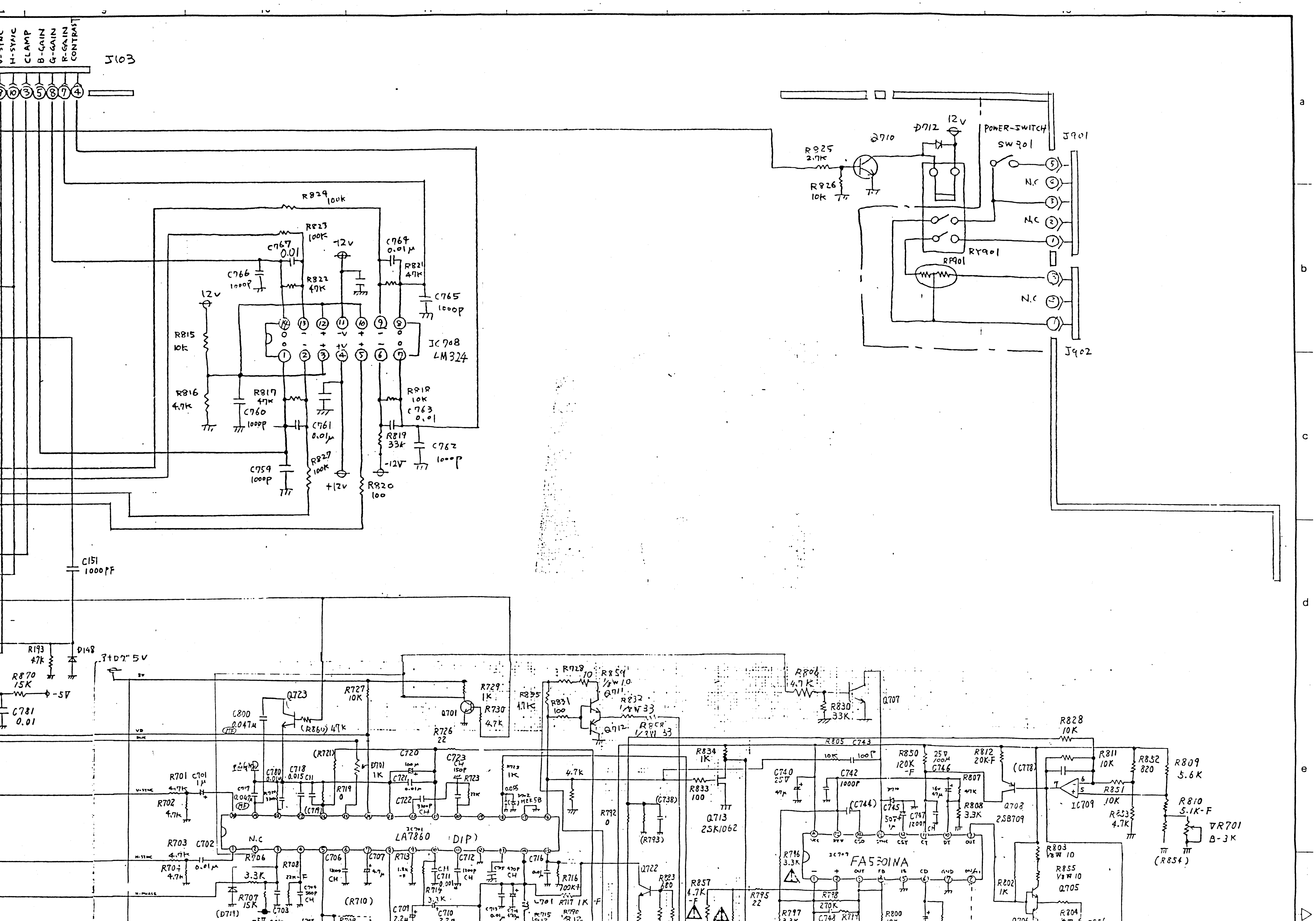
R747 0
(C728)
(R748)
C726 0.1M
C727 0.1μ
R745 3.3K
(C729)
R746 1.5K
R865 2.2K
R867 10K
R866 1.8K

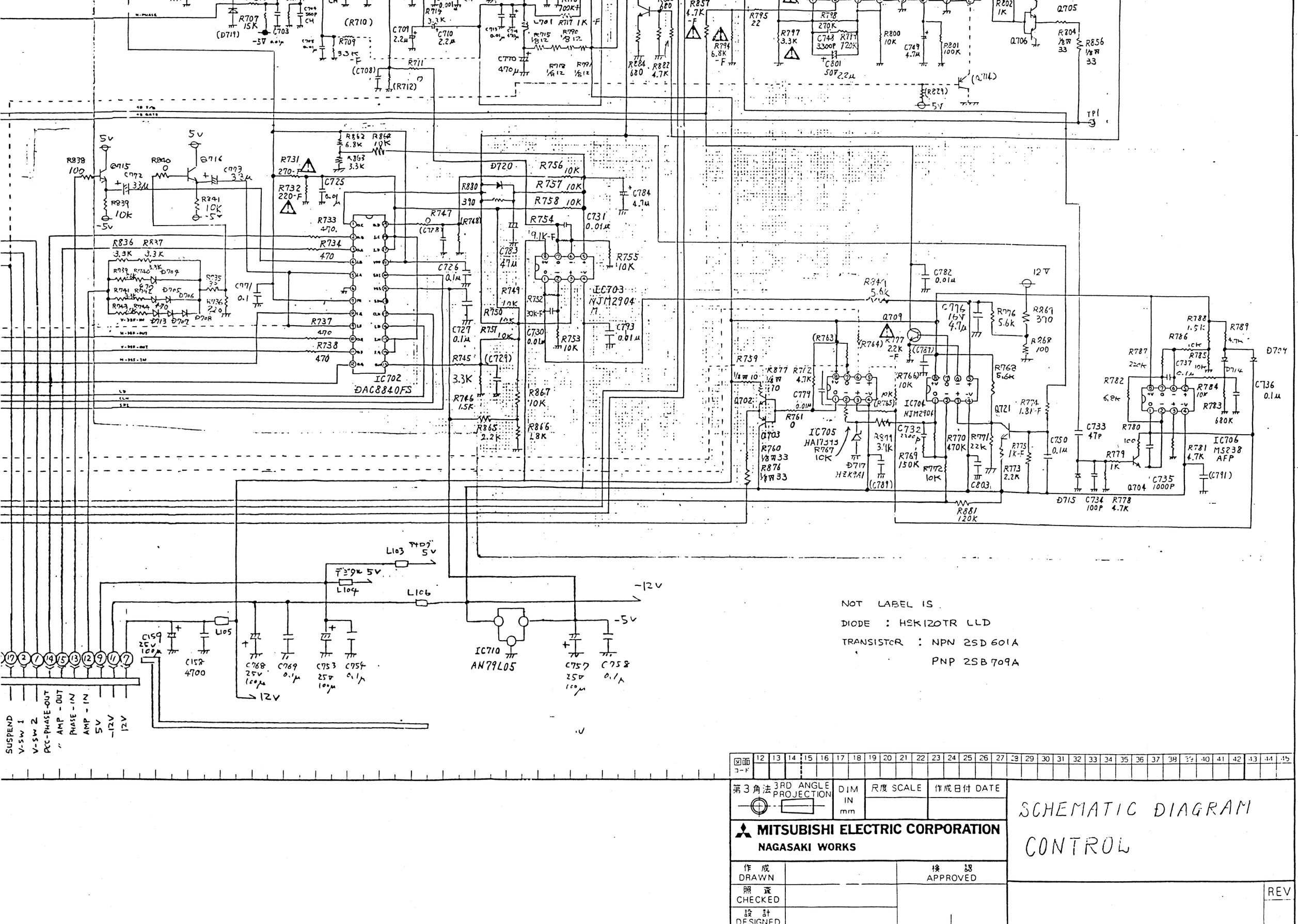
D720
R880 390
R756 10K
R757 10K
R758 10K
C731 0.01μ
C784 4.7μ
R754 9.1K-F
R755 10K
C783 47μ
R749 10K
R750 10K
R751 10K
R752 30K-F
R753 10K
C730 0.01μ
C793 0.01μ
IC703 NJM2904M

C159 25V 100μ
C158 4700
L105
C768 25V 100μ
C769 0.1μ
C753 25V 100μ
C754 0.1μ
12V

L103 FHD 5V
3.9Ω 5V
L104
L106
IC710 AN79L05
C757 25V 100μ
C758 0.1μ
-5V
-12V

5 6 7 8 9 10 11 12


H-SYNC
CLAMP
B-GAIN
G-GAIN
R-GAIN
CONTRAST
J103
R829 100k
R823 100K
C767 0.01
C766 1000P
R822 47K
12v
C764 0.01μ
R821 47K
C765 1000P
R815 10K
R816 4.7K
IC708 LM324
R817 47K
C760 1000P
C761 0.01μ
R818 10K
C763 0.01
R819 33k
C762 1000P
-12V
C759 1000P
R827 100K
+12v
R820 100
C151 1000PF
R193 47K
D148
R870 15K
-5V
C781 0.01
Q710
R925 2.7K
R826 10K
D712
POWER-SWITCH
SW901
J901
N.C
RY901
RP901
J902
Q723
C800 0.047μ
R727 10K
Q701
R729 1K
R730 4.7K
R726 22
(R860) 47K
R701 4.7K
C701 1μ
R702 4.7K
R703 4.7K
C702 0.01μ
R704 4.7K
R706
3.3K
R707 15K
(D719)
C703
R708
C704 560P CH
(R710)
C706
C707
R713
C709
C710
R714 3.3K
C711 0.001
C712
C716
R716 100K-F
L701
R717 1K-F
R715
C717 0.047μ
C780 0.01μ
C718 0.015
(R721)
(C719)
R719 0
D701 1K
C720 100μ
C721 0.01μ
C722 3300P CH
C723 CH 150P
R723
IC701 LA7860 (DIP)
N.C
R728 10
R859 1/8W 10
Q711
R835 4.7K
R831 100
R832 1/8W 33
Q712
R858 1/8W 33
4.7K
R792 0
(C738)
(R793)
Q722
R823 680
R834 1K
R833 100
Q713 2SK1062
R857 4.7K-F
R795 22
R806 4.7K
R830 33K
Q707
R805
C743
10K
100P
C740 25V 47μ
C742 1000P
(C744)
C745
R796 3.3K
IC707 FA5301NA
R797
R798 270K
R799
R800
R850 120K-F
C746 25V 100μ
C747 1200P
R807 47K
R808 3.3K
R812 20K-F
(C778)
Q708 2SB709
R828 10K
R811 10K
IC709
R851 10K
R852 820
R853 4.7K
R809 5.6K
R810 5.1K-F
VR701 B-3K
(R854)
R803 1/8W 10
R855 1/8W 10
Q705
R802 1K
R804
a
b
c
d
e



第3角法 3RD ANGLE PROJECTION	DIM IN mm	尺度 SCALE	作成日付 DATE	SCHEMATIC DIAGRAM CONTROL	
MITSUBISHI ELECTRIC CORPORATION NAGASAKI WORKS					
作成 DRAWN		検認 APPROVED			REV
照査 CHECKED					
設計 DESIGNED					

DWG NO

1 2 3 4 5 6 7 8

a b c d e f

J509 TO H-DY

L501 26V

D501 HZ5SALL C576 50V 0.1

Q501 J133

L502 3mH

D502 2SLB0

C502 50V 220μ

C574 50V 1031

R501 10K

R683 220 C501 4700P

R502 39K

VR501 100K

R503 22K

R504 1W 10Ω M

R505 1W 10Ω M

R506 ½W 56K

T501

C571 0.01μ

D544 RGP10D

R685 100 C503 27000P

Q502 K701

R659 1K

R507 3W 1.5

L513

R508 3W 1.5

D503 RL2Z

R509 ½W 39

R570 39 ½W

Q503 2SC5044

D505 CTU-G20R

D504 FMP3FU

D507

L504

L505

C505 500V 10000P

R511 2W 270

RY501

C506 200V 0.91μ

C507 400V 0.43μ

Q505 MTP25N 10E

Q506 MTP25N 10E

R662 47K

R660 47K

R513 33K

R514 33K

C511 1000P

C512 1000P

R512 33K

Q504

(C9) (R7)

(C575) (R669)

R516 ½W 3.9K

R517 ½W 3.9K

R518 ½W 3.9K

D508

D509

D510

D508 ~ D510 RGP10K 5008

R522 6.8K

J501 (1/2)

HD 6

HD-F/B 4

HD GATE 5

H-LIN 10

CS 0 17

CS 1 18

CS 2 19

TO CONT J101

12V

24V

-12V

200V

H-POSI 1

H-POSI 2

J501 (2/2)

GND 1

GND 15

+B-GATE 13

+B-F/B 3

HV-GATE 11

H-D-IN 18

HV-F/B 2

H-D-OUT 16

V-D-OUT 14

TXD 19

TRD 20

L511 M3R2

C584 250V 1μ

Q534 2SJ307

D542 HZS11C2L

R650 10K

C563 500P 4700P

R684 220

L510 1.5mH

L512 1.3mH

R651 3W 0.47Ω M

D541 S2L60

J510

C536 200V 220μ

(R664)

R655 ½W 56K

R656 1/2W 56K

C567 500V 470P

SW501 ESD11V130

VR502 5K

R677 47K

R680 4.7K

R678 22K

Q540 C2705

D546

P675 1K

R676 10K

Q539 C1815

R679 6.8K

R681 10K

+C582 100V 10μ

VR503 3K

R658 100

Q536 C3243

R657 ½W 1.2

Q537 A1283

L509 10mH

R519 3.3K

R520 10K

R521 10K

(R666)

(R667)

(R668)

Q508

Q509

Q510

Q511

C585 0.22

R690 100

R682 18K

R670 6.8K

C578 4700P

Q538

R671 3.3K

D548

R672 100

C579 4.7M

R673 1K

R674 2.7K

C569 50V 0.1M

D547

R569 2.7K

R570 47K

H-D-OUT (16)
V-D-OUT (14)
TXD (19)
TRD (20)
VCP-F/B (12)

TO CONT J101

80V

PROT.
OFF COMPLETE
SUSPEN

J502 (1/2)
SUSPEN (4)
OFF-CO (3)
P-OUT (7)
A-OUT (6)
P-IN (8)
H-SIZE (13)
A-IN (9)
V-BLA (1)
BRIGH (2)
5V (12)

TO CONT J102

5V
26V

C560 35V 33μ
R636 4.7K
C559 35V 33μ
R637 4.7K
R638 10K
R639 10K
R635 27K
C558 25V 4.7μ
R632 470
R633 39K
R629 39K
Q532
Q533 K301
R626 39K
R627 39K
C555
C554 50V 4.7μ (NP)
C557 470P
R634 39K
C556 0.01μ
R630 39K
R631 100K

IC502 LM324
1 (0) 2 (−) 3 (+) 4 (+V) 10 (+) 9 (−) 8 (0)
14 (0) 13 (−) 12 (+) 11 (−V) 5 (+) 6 (−) 7 (0)

R640 100K
R641 82K
C561 25V 1μ
R642 10K
R644 1K
R643 10K
R663 R1 10K
R646 10K
C562 470P
R647 68K
R645 27K
R648 27K
D540
D539
R649 93K

C572 33μ
R615 1.2K
R619 6.8K
Q530
R618 100
R620 2.2K
R614 330
R616 1.2K
R617 560
C552 25V 10μ
D538
R612 2.7K
R613 8.2K
C550 25V 10μ
R621 12K
C553 0.18μ
C573 25V 33μF
R623 82K
R625 100
Q531
D537
R624 33K
R622 1.2K
C551 0.01μ
D536
R610 330
R611 820K
D535
Q529

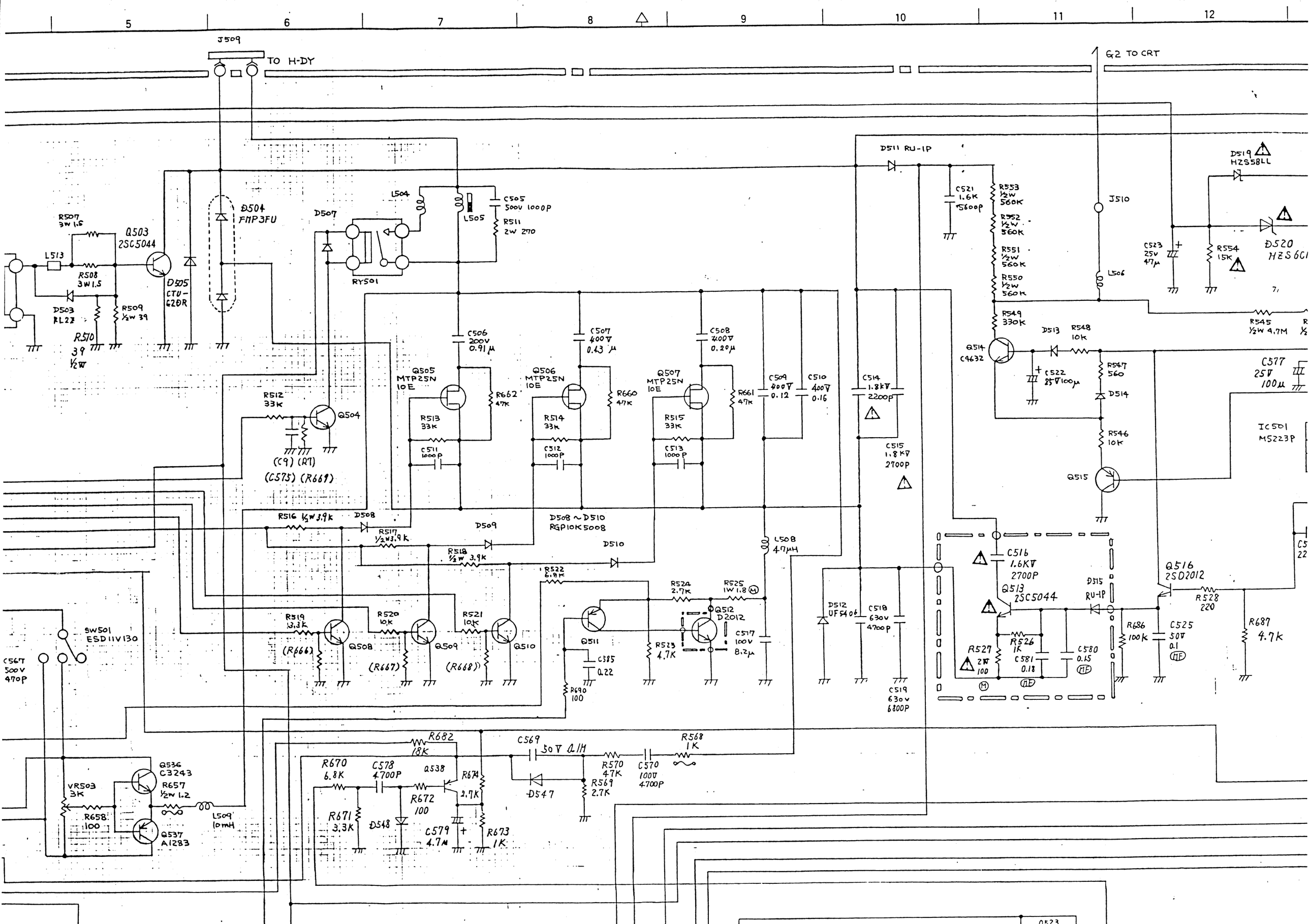
(D545)
R572 2.7K
R594 1/2W 100K
R595 1/2W 100K
R692 1/2W 120K
R691 1/2W 120K
R596 1/2W 100K
R693 1/2W 120K
R592 1/2W 1K
Q526 C4632
R597 220
C547 25V 22μ
Q527 2SC4632
C546 450V 4.7μ
D533 RGP10D
R609 1/2W 330K
R608 1/2W 330K
R607 1/2W 330K
Q528 2SC4632
D534
R603 68
R606 3.6K
R605 10K
C549 25V 100μ
R604 3.3
C548 25V 100μ

J506
6 GND
2 26V
3 V-SAW
4 V-RT
1 12V
5 GND

TO V-DEFL J401

改定 CHANGE

1 2 3 4 5 6 7 8


5
6
7
8
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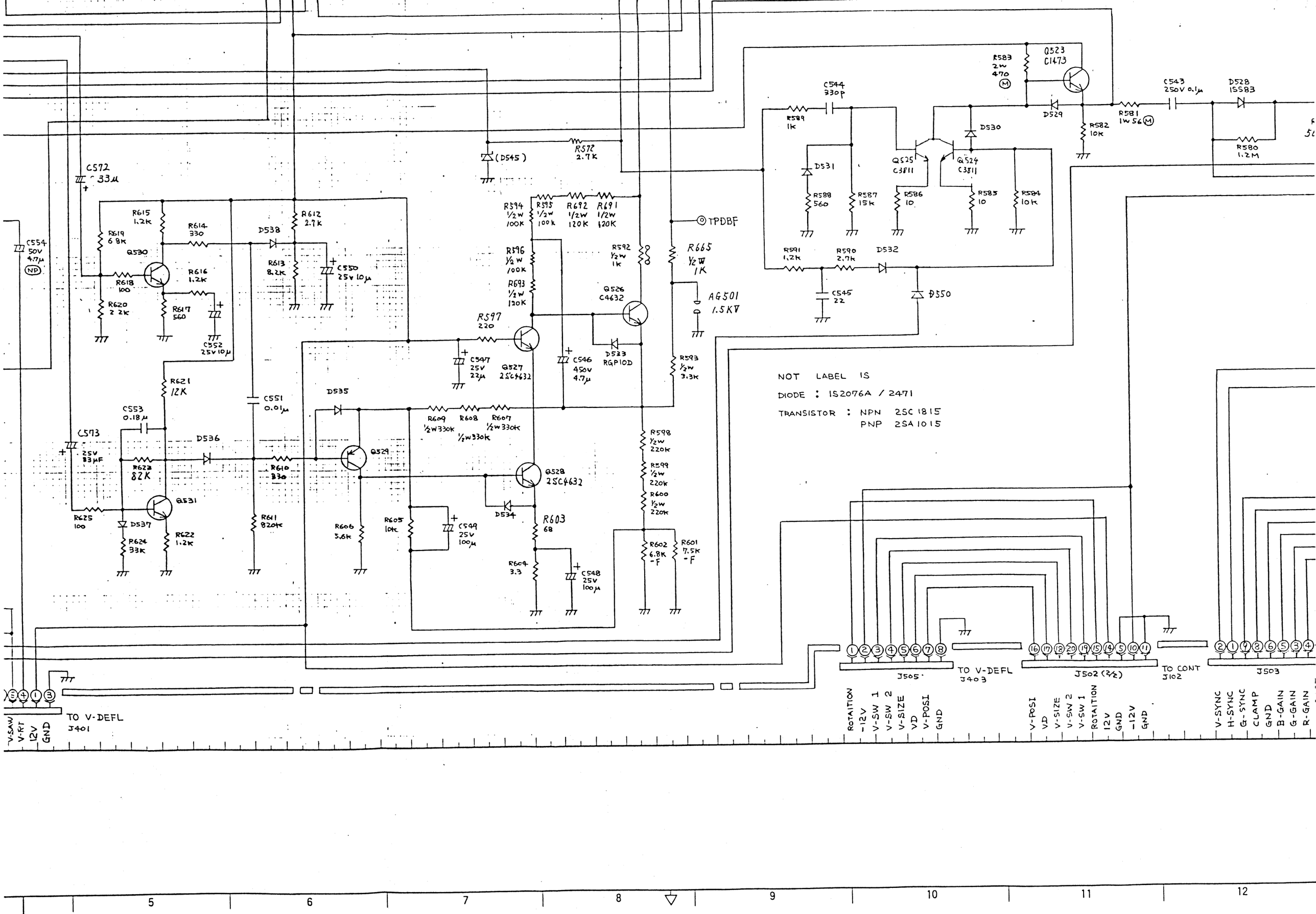
10
11
12
J509
TO H-DY
G2 TO CRT
D511 RU-1P
D519 HZS58LL
J510
L506
D520 HZS6CL
C521 1.6K 5600P
R553 ½W 560K
R552 ½W 560K
R551 ½W 560K
R550 ½W 560K
C523 25V 47μ
R554 15K
R545 ½W 4.7M
R549 330K
D513
R548 10K
Q514 C4632
C522 25V 100μ
R547 560
D514
R546 10K
Q515
C577 25V 100μ
IC501 MS223P
R507 3W 1.5
Q503 2SC5044
L513
R508 3W 1.5
D503 RL22
R509 ½W 39
R510 39 ½W
D505 CTU-G20R
D504 FMP3FU
D507
L504
L505
C505 500V 1000P
R511 2W 270
RY501
C506 200V 0.91μ
C507 400V 0.43μ
C508 400V 0.20μ
C509 400V 0.12
C510 400V 0.16
Q505 MTP2SN 10E
Q506 MTP2SN 10E
Q507 MTP2SN 10E
R662 47K
R660 47K
R661 47K
R513 33K
R514 33K
R515 33K
C511 1000P
C512 1000P
C513 1000P
R512 33K
Q504
(C9) (R7)
(C575) (R669)
C514 1.8KV 2200P
C515 1.8KV 2700P
R516 ½W 3.9K
R517 ½W 3.9K
R518 ½W 3.9K
D508
D509
D510
D508 ~ D510 RGP10K 5008
L508 47μH
R522 6.8K
R524 2.7K
R525 1W 1.8 Ⓜ
Q512 D2012
C517 100V 8.2μ
R523 4.7K
Q511
C585 0.22
R690 100
R519 3.3K
R520 10K
R521 10K
(R666)
(R667)
(R668)
Q508
Q509
Q510
D512 UF5406
C518 630V 4700P
C519 630V 6800P
C516 1.6KV 2700P
Q513 2SC5044
D515 RU-1P
Q516 2SD2012
R528 220
R687 4.7K
R686 100K
C525 50V 0.1 MF
R527 2W 100 Ⓜ
R526 1K MF
C581 0.18 MF
C580 0.15 MF
SW501 ESD11V130
C567 500V 470P
VR503 3K
R658 100
Q536 C3243
R657 ½W 1.2
Q537 A1283
L509 10mH
R682 18K
R670 6.8K
C578 4700P
Q538
R674 2.7K
R672 100
R671 3.3K
D548
C579 4.7M
R673 1K
C569 50V 0.1M
D547
R569 2.7K
R570 47K
C570 100V 4700P
R568 1K


C572 33µ
R615 1.2K
R619 6.8K
Q530
R614 330
R618 100
R616 1.2K
R620 2.2K
R617 560
C552 25V 10µ
D538
R612 2.7K
R613 8.2K
C550 25V 10µ
C554 50V 4.7µ NP
R621 12K
C553 0.18µ
C573 25V 33µF
R623 82K
D536
Q531
R625 100
D537
R624 33K
R622 1.2K
C551 0.01µ
R611 820K
D535
R606 5.6K
Q529
R605 10K
C549 25V 100µ
R609 ½W330K
R608
R607 ½W330K
½W330K
Q528 2SC4632
D534
R603 68
R604 3.3
C548 25V 100µ
(D545)
R572 2.7K
R594 ½W 100K
R595 ½W 100K
R692 ½W 120K
R691 ½W 120K
R596 ½W 100K
R693 ½W 120K
R592 ½W 1K
R597 220
Q527 2SC4632
C547 25V 22µ
C546 450V 4.7µ
D533 RGP10D
TPDBF
R665 ½W 1K
AG501 1.5KV
R593 ½W 3.3K
R598 ½W 220K
R599 ½W 220K
R600 ½W 220K
R602 6.8K -F
R601 7.5K -F
R583 2W 470 M
Q523 C1473
C544 330P
R589 1K
D529
R582 10K
C543 250V 0.1µ
D528 1SS83
R581 1W 56 M
R580 1.2M
D530
D531
Q525 C3811
Q524 C3811
R588 560
R587 15K
R586 10
R585 10
R584 10K
R591 1.2K
R590 2.7K
D532
C545 22
D550
NOT LABEL IS
DIODE : 1S2076A / 2471
TRANSISTOR : NPN 2SC1815
PNP 2SA1015
J505
TO V-DEFL J403
J502 (2/2)
TO CONT J102
J503
ROTATION -12V V-SW 1 V-SW 2 V-SIZE VD V-POSI GND
V-POSI VD V-SIZE V-SW 2 V-SW 1 ROTATION 12V GND -12V GND
V-SYNC H-SYNC G-SYNC CLAMP GND B-GAIN G-GAIN R-GAIN
V-SAW V-FIT 12V GND
TO V-DEFL J401
5 6 7 8 9 10 11 12

G2 TO CRT

D511 RU-1P

C521 1.6K 5600P

R553 ½W 560K

R552 ½W 560K

R551 ½W 560K

R550 ½W 560K

J510

L506

R549 330K

D513

R548 10K

Q514 C9632

C522 25V 100μ

R547 560

D514

R546 10K

Q515

D519 HZS58LL

D520 HZS6CIL

C523 25V 47μ

R554 15K

Q541 2SC3112-B

R556 ½W 220

VR504 500

R555 560-F

R545 ½W 4.7M

R544 ½W 4.7M

R543 68K

C577 25V 100μ

C531 2200P

IC501 M5223P

+V O − + O − + −V

R542 10K

VR505 5K

R541 5.6K

C530 0.01μ

R534 470K

R535 47K

R536 150K

C527 6800P

C526 0.056μ

C524 2200P

R533 220K

T502

HV

F1

F2

D522 RGP10G6038

R557 ½ 1.2

R558 270K-F

C537 50V 1μ

C535 200V 10μ

C532 50V 3.3μ

C529 50V 22μ

R559 120K

R561 3.6K-F

R560 2.7K-F

C508 400V 0.20μ

Q507 1TP25N OE

R661 47K

C509 400V 0.12

C510 400V 0.16

R515 33K

C513 1000P

C514 1.8KV 2200P

C515 1.8KV 2700P

L508 4.7μH

R524 2.7K

R525 1W 1.8 Ⓜ

Q512 D2012

R523 4.7K

C517 100V 8.2μ

D512 UF5406

C518 630V 4700P

C519 630V 6800P

C516 1.6KV 2700P

Q513 2SC5044

R527 2W 100 Ⓜ

R526 1K

C581 0.18 MF

C580 0.15 MF

D515 RU-1P

R686 100K

C525 50V 0.1 MF

Q516 2SD2012

R528 220

R687 4.7K

R537 3.3K

(R538)

C529 25V 4.7μ

R539 0

VR506

R540 0

R568 1K

Q519

C538 50V 10μ

R562 3.6K-F

C539 0.01μ

R563 2.2K-F

R688 100K

R564 1K

D523

R567 2W 2.2K

R565 100K

R566 220

D524 HZ33-2

D525

R575 12K

R573

a b c d e f

NOT LABEL IS

DIODE : 1S2076A / 2471

TRANSISTOR : NPN 2SC1815
PNP 2SA1015

第3角法	3RD ANGLE PROJECTION
DIM IN mm	
尺度 SCALE	NTC
作成日付 DATE	
MITSUBISHI ELECTRIC CORPORATION	NAGASAKI WORKS
作成 DRAWN	
照査 CHECKED	
設計 DESIGNED	
検認 APPROVED	

DEFLECTION SCHEMATIC DIAGRAM

REV

記 録

DWG No.

NOT LABEL IS
DIODE : 1S2076A / 2471
TRANSISTOR : NPN 2SC 1815
PNP 2SA1015

J401
12V
26V
GND
V-RT
V-SAW
24V
TO MAIN J506

C418 50V 47μ

J404
TO COIL ROTAITION

J403
ROTAITION
-12V
V-SW 1
V-SW 2
V-SIZE
VD
V-POSI
GND
TO MAIN J505

Q408
R441 10K
R443 2.2
D406
R445 2W 47
R444 2.2
D407
Q409
R442 10K

IC 4
+VCC1
C401 25V 220μ
R401 47
R404 47K
D405
L401 100μ
C402 4700P

IC402 TC4052BP / MC1452BP
VSS
B
R435 47K
R434 47K
R438 100K
Q406
R437 330K
R439 100K
Q407
R436 330K
C416 0.01μ

改 定 CHANGE

IC 401 LA7837

VCC1 TRIG T SIZE 50/60 RAMP AC/DC +VCC8 PUMP HF GND OUT +VCC 13

1 2 3 4 5 6 7 8 9 10 11 12 13

NC

D401 HZ6AIL

R402 1K

R403 10K

Q402

C403 35V 0.68μ TAN

C404 50V 220μ

C405 50V 220μ

D402 RGP10D

C406 10P SL

C407 0.22μ 100V

R407 2.2

R408 2W 150

J402

1 2 3

TO V-DY

R406 ½W 1.2

R448 2W 100Ω

Q403 C2655

R429 6.8K

R427 2.2

D403

R426 1W 33 Ⓜ

R409 33K-F

R410 12K

C410 25V 220μ

R428 2.2

D404

R446 470

(VR401)

Q404 A1020

R449 2W 100Ω

R430 18K

R411 27K

R412 5.6K-F

C408 25V 1000μ

R432 100

Q405

C409 25V 2.2μ

C417 0.56 TH

R433 47K

R431 1.5K

R421 47K

C415 50V 1μ

R447 22K

R440 2W 1.2 Ⓜ

R425 68K

R424 0

R423 120K

R422 22K

8 7 6 5 4 3 2 1

VSS VEE INH Y1 Y3 Y Y2 Y0

B A X3 X0 X X1 X2 VDD

9 10 11 12 13 14 15 16

R419 12K -F

R417 0

R415 3.9K -F

R413 2.7K -F

R420 1K -F

R418 5.1K-F

R416 47

R414 330

C413 0.27μ

C412 0.47μ

C411 25V 3.3μ

図面コード 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45

MITSUBISHI ELECTRIC CORPORATION

NAGASAKI WORKS

DIM. IN mm	作成日付 DATE		検認 APPROVED
尺度 SCALE	作成 DRAWN		
: NTS	照査 CHECKED		
	設計 DESIGNED		

TITLE VERTICAL DEFLECTION SCHEMATIC DIAGRAM

REV

87

記 録

DWG No.

IC200
M52327SP

J2B1 Blue
J2R1 Red
J2G1 Green

L2B1
C2B1 4700P
D2B1 1SS83
R2B0 75
C2B0 16V 33μ
D2B0 1SS83

L2R1
C2R1 4700P
D2R1 1SS83
R2R0 75
C2R0 16V 33μ
D2R0 1SS83

L2G1
C2G1 4700P
D2G1 1SS83
R2G0 75
C2G0 16V 33μ
D2G0 1SS83

C2B2 103P
R2B7 100
R2B1 10
C2B4 50V 2.2μ
C2R2 103P
R2R7 100
R2R1 10
C2R4 50V 2.2μ
C2G2 103P
R2G7 100
R2G1 10
C2G4 50V 2.2μ

R2B4 22
C2B5 1μ 50V
R2R4 22
C2R5 50V 1μ
R2G4 22
C2G5 50V 1μ
L201
C208 100μ
C209 103P

R2B3 47
R2B2 680
Q2B0 2SC436
L2B2
R2B5 220
R2R3 47
R2R2 680
Q2R0 2SC436
L2R2
R2R5 220
R2G3 47
R2G2 680
Q2G0 2SC436
L2G2
R2G5 220
C602 500V 472P
C604 500V 472P
C603 100V 47μ
L600
C203 25V 100μ

R213
C207 25V 100μ
R207 3.9K
R208 10K
C213 50V 2.2μ
R205 5.6K
R206 2.7K
C202 1000P
R2K 100
C21 25V 100μ
C212 103P

C200 16V 33μ
R200 100K
103P
Q201 2SK359
NP
R202 4.7K
R201 100K
R203 560
C201 16V 33μ
R204 100

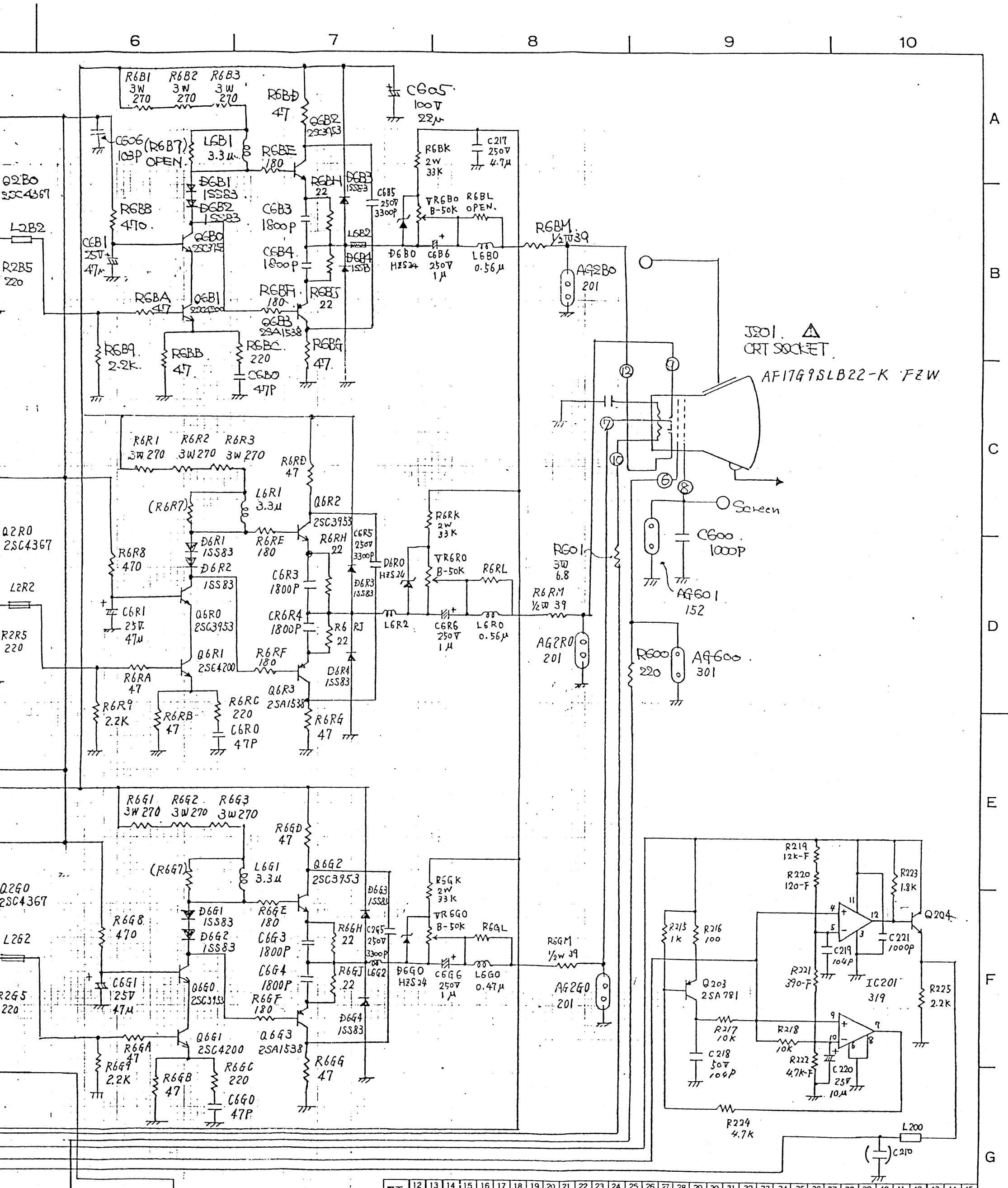
R2G8 100
R2R8 100
R2B8 100

2SA1207
Q202
R211 10K
VR211 100K
C215 0.01
R210 100K
SW201
R212 10K

J202
6 SYNC
7 CLAMP
6 CONT
5 GND
4 B-Gain
3 R-Gain
2 7V
1 G-Gain

1 5V
2
3 15V
4
5 -30~-80
6 -100V
7
8 7V
9 12V
10 GND
J2

改 定 CHANGE



DIM. IN mm	作成日付 DATE		検認 APPROVED
尺度 SCALE	作成 DRAWN		
: NTS	照査 CHECKED		
	設計 DESIGNED		

MITSUBISHI ELECTRIC CORPORATION
NAGASAKI WORKS

TITLE

EFY7705.

SCHEMATIC-DIAGRAM-CRT

REV

NOT LABEL IS'

DIODE : 1S2076A / 2471

TRANSISTOR : NPN 2SC 1815
PNP 2SA 1015

J904 TO CONTROL J901

AC IN 100~240V

J903 F901 2184A L901

C901 AC125/250V 0.33μ

R901 1/2 220K

(R902)

C902 AC125/250V 0.33μ

C903 F-VA1 4700P

C904 F-VA1 4700P

C907 F-VA1 2200P

IC901 MJ2400

R904 1/2W 56K

R903 1/2W 56K

C905 400V 560μ

R905 1K

R906 5W 20

C906 25V 100μ

C908.C909 F-VA1 2200P

D906 MPG06J623

R917 2W 47K

D901 RGP10G6038

Q901 2SD1640

R908 22

D902 RGP10D

D903 RGP10G6038

R910 2.7K-F

C913 160V 10μ

R907 2W 10K

C912 25V 150μ

D904 HZ7C2L

C914 CH 1000P

IC902 STR-S6707

VCC INH F/B OCP DOUT DIN B GND

R912 1K

R921 1.5K-F

R911 2W 18

C915 25V 220μ

D909 EG01Y

R920 2W 0.47

R916 2W 0.47

R914 100-F

R915 3.6K-F

C916 1KV 1500P SL

L902

T901

C910.C911 F-VA1 4700P

IC904 TLP634

D951 RGP10K5008

C951 250V 220μ

D952 RGP30G

C952 100V 100μ

R951 3.3 3W

Q952 2SB1095

D953 RGP15J

F953 1/2W 1.2

L951

C953 25V 1000μ

D954 RGP15D

C954 50V 1000μ

D955 EGP30D

F951 3A

C955 10V 2200μ

D960 RGP10G6038

C960 25V 1000

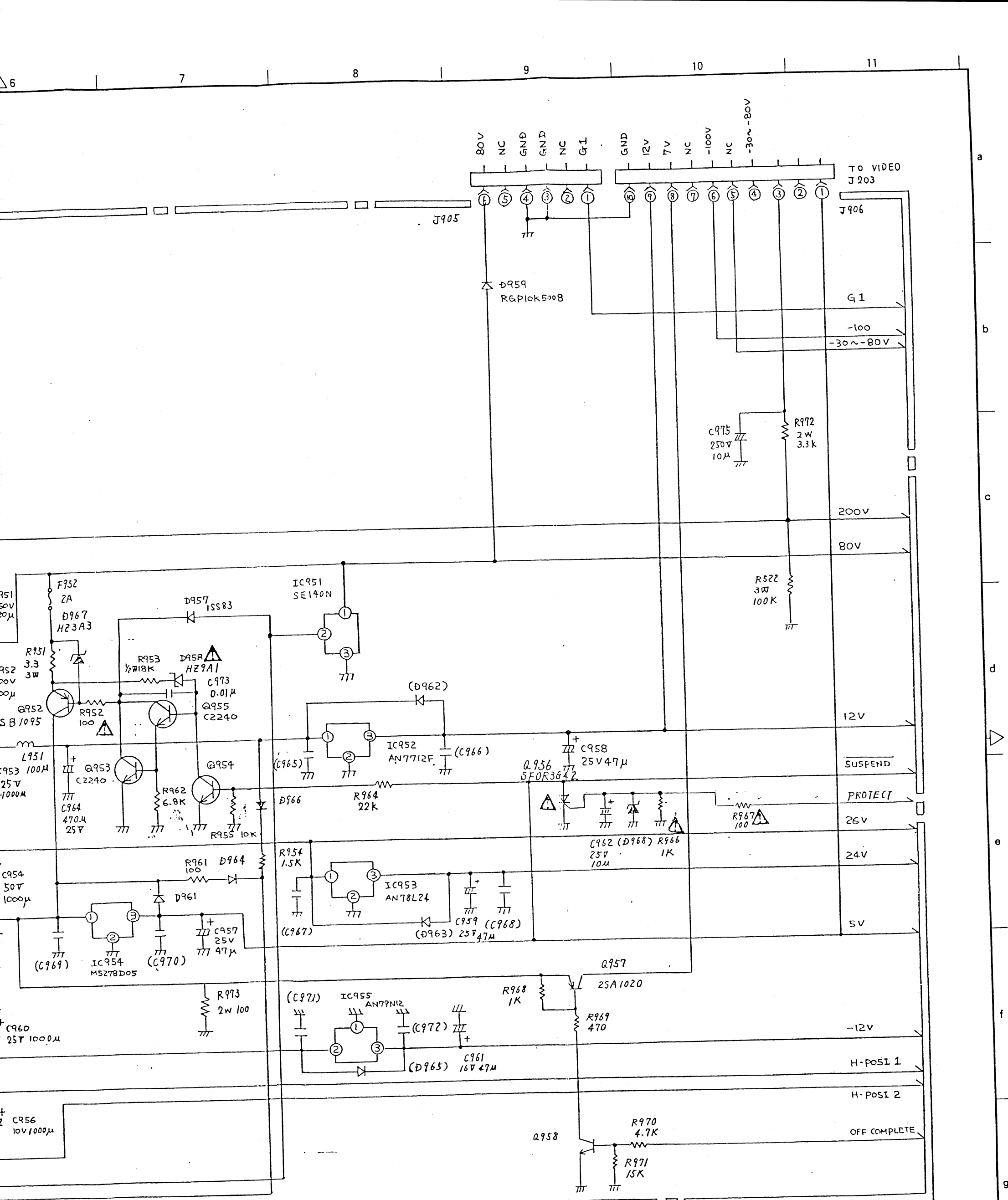
R963 1/2 1.2

R956 1/4W 0.22

D956 EGP30D

C956 10V 1000μ

CHANGE 改定



第3角法 3RD ANGLE PROJECTION	DIM. IN mm
尺度 SCALE	NTS
作成日付 DATE	

MITSUBISHI ELECTRIC CORPORATION
NAGASAKI WORKS

作成 DRAWN		検認 APPROVED
照査 CHECKED		
設計 DESIGNED		

POWER SCHEMATIC DIAGRAM

REV